



**DESIGN A MODEL FOR INTEGRATED MANAGEMENT SYSTEM (IMS),
OF (QUALITY, ENVIRONMENT, AND OCCUPATIONAL HEALTH & SAFETY)
(A CASE STUDY IN INDUSTRY)**

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ABSTRACT:

ISO 9001:2015, ISO 14001:2015, and ISO committee draft (CD) (ISO/CD 45001) are standards to be used in industrial processes. The application of each system separately consumes a lot of time, effort, and money and infrastructure. Therefore, the integration of the three systems in one homogeneous system can be very useful for the company.

Keywords: *Integrated management systems; ISO 9001; ISO 14001; OHSAS 18001; ISO 45001; health and safety; environment, quality; HSEQ*

ملخص البحث:

تطبيق أنظمه الجوده الثلاثه : **ISO 9001:2015 - ISO 14001:2015** و السلامه **ISO/CD 45001** كل منهم منفرداً في الشركات الصناعيه يؤدي إلي أستهلاك الكثير من الجهد والوقت والمال ولذلك تهدف الدراسه إلي دمج الثلاث أنظمه في نظام واحد يسمي النظام المتكامل للجوده وذلك عن طريق :

1. دراسه ومقارنه التشابه و الأختلاف في التركيب و المتطلبات بين المواصفات الثلاثه القديمه
2. دراسه ومقارنه التشابه و الأختلاف في التركيب و المتطلبات بين المواصفات الثلاثه الحديثه ومقارنتها بالأصدار القديم للوقوف علي التحديثات
3. أنشاء و تحديث مجموعه من الإجراءات والسياسات التي تشمل تغطي الأنشطة المختلفه للثلاث مواصفات بعد التحديث
4. عمل تحليل أحصائي للأستبيان ببرنامج SPSS وكذلك برنامج Microsoft Excel و ذلك للتعرف علي الفوائد الداخليه والخارجيه الناتجه من تطبيق النظام المتكامل وكذلك التعرف علي المعوقات الداخليه والخارجيه التي تعوق تطبيق النظام المتكامل

التوصيات :

يوصي الباحث بأهميه و ضروره تطبيق النظام المتكامل ودمج الثلاث مواصفات معاً لما له من أهميه في خفض التكلفه وتوفي للوقت وكذلك لأهميته في عدم تكرار النماذج والأجراءات الخاصه بتطبيق كل نظام منفرداً وذلك لرفع كفاءه الأداء للمنشآت الصناعيه خصوصاً بعد حدوث تجانس في التركيب للمواصفات الجديده الحديثه من إصدار 2015 فأعلي.

1. INTRODUCTION:

An Integrated Management System (IMS) integrates all of an organization's systems and processes into one complete framework, enabling an organization to work as a single unit with unified objectives to achieve its purpose and mission. Organizations often focus on management

systems individually. The integration of all the management systems into a single system and centrally managed is defined as Integrated Management System (IMS). (Tang, 2003; Matias, 2002; Asif 2008 and McDonald, 2003).

The management system of the organization is the framework of the processes and the procedures for fulfilment of all required tasks to achieve the objectives. Integrated management for easier management and operations.

Integrated processes are usually what are referred to when organizations discuss integrated management systems. In fact, there are three key aspects to integration processes, risk, and audits. (Chad Kymal et al (2015).

The main purposes of the study are divided into two categories (objectives and Sub-objectives), the main purposes of this study are:

1. To understand the methodology and its requirement for establishing and design an Integrated Management System (ISO 9001:2015, ISO 14001:2015, and ISO/CD 45001:2016) within typical manufacturing industry.
2. To analyze the implementation of the integrated management system based on the standards (ISO 9001:2015, ISO 14001:2015 and ISO/CD 45001:2016)

2-PROCEDURES OF THE STUDY:

1. Study the structure of old standards and its requirements (ISO 9001:2008, ISO14001:2004 and OHSAS 18001:2007) (The literature review).
2. Study and identify the main changes to update to the new published ISO standards and correlation changes between old and new corresponding standards.
 - I. ISO 9001 :2008 and ISO 9001 :2015-Quality Management System(QMS);
 - II. ISO 14001 :2004 and ISO 14001 :2015-Environmental Management System(EMS);
 - III. OHSAS 18001 :2007 and ISO/CD 45001:2016-Occupational Health Safety Management System(OHSAS);
3. Identify the common High-level structure (HLS), similarities and differences between new published ISO standards, (ISO 9001:2015, ISO 14001:2015 and ISO/CD 45001:2016).
4. Compare the clauses of all the three systems.
5. Identify the activities (processes) of every new ISO standards as individual standard.
6. Establishing and studying the integration the main procedures for the integration activities of the three new ISO standards.
7. Establishing questionnaires for Identify IMS benefits and barriers.
8. Analysis questionnaires results by SPSS program to identify:
 - I.I identify the internal and external benefits of applying integrated management System (IMS).
 - II.I identify the internal and external difficulties and barriers of Integration Management System.

3-RESULTS And DISCUSSION:

3.1 The International Organization for Standardization (ISO) is updating (ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007) to new versions that Issued in 2015 and the highest, by specifications are summarized in the following:

1. Complete reformatting [New unified High level Structure (HLS)]-Even when requirements are essentially unchanged between the editions, these are frequently found under a new clause/sub-clause.

The new standard has 10 clauses:

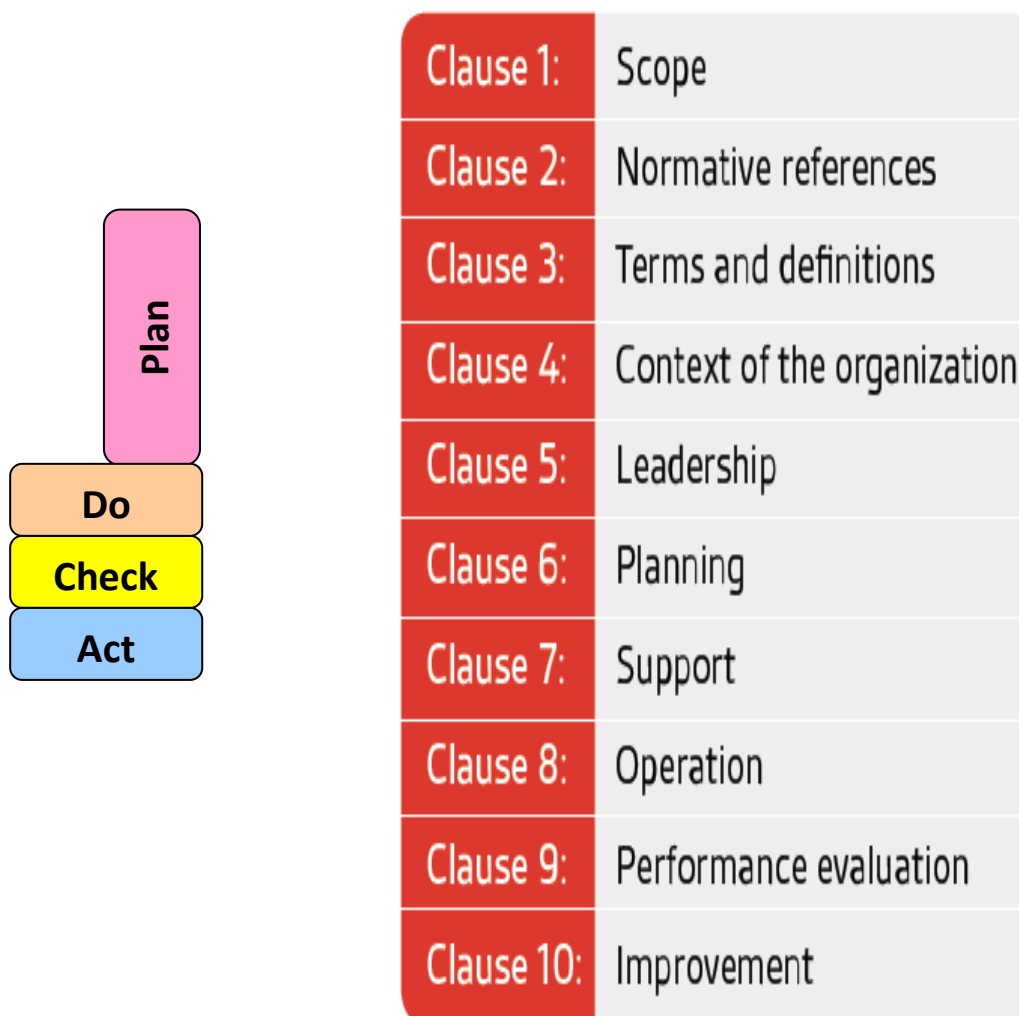
All standards of management systems will have the same High level structure (HLS), the following 10 clauses: 1 – Scope, 2 – Normative references, 3 – Terms and definitions, 4 – Context of the organization, 5 – Leadership, 6 – Planning, 7 – Support, 8 – Operation, 9 – Performance evaluation, 10 – Improvement. The high level structure has 10 clauses as shown in Figure 1

2. Two new clauses related to the context of the organization: to identify and understand factors that affect or can affect the ability to reach the intended results of its management system, including:

4.1 Understanding the organization and its context

4.2 Understanding the needs and expectations of interested parties.

3. Risks and opportunity management (Clause 6.1) to determine, consider and, where necessary, take action to address any risks or opportunities that may impact (either positively or negatively) the ability of MS to deliver its intended results.



(Figure: 1) ISO High-level structures version (2015)

4. New clause “Leadership and commitment” (Clause 5.1).
5. The terms "**Leadership**" replaces "**Management Representative**" Management Representative not required, (Clause 5.1).
6. Strengthened emphasis on “Leadership” and management commitment, including actively engaging and taking accountability for the effectiveness of the management system. (Clause 5.1)
7. Strengthened focus on objectives as drivers for improvements (Clause 6.2) & to measure, monitor, analyze and evaluate performance (Clause 9.1).
8. New clause “Support” (Clause 7.0).
9. More emphasis on control of planned changes and review of consequences of unintended changes (Clause 8.1).
10. Extended requirements related to Communications (internal communication) to, Includes also external communication (Clause 7.4).

3.2-Internal benefits of applying integration management system:

The following tables illustrate and summarize the results of the statistical adjustment based on the survey results:

(Table 1) Internal benefits Analysis Statistics (Questions 1:10) survey results

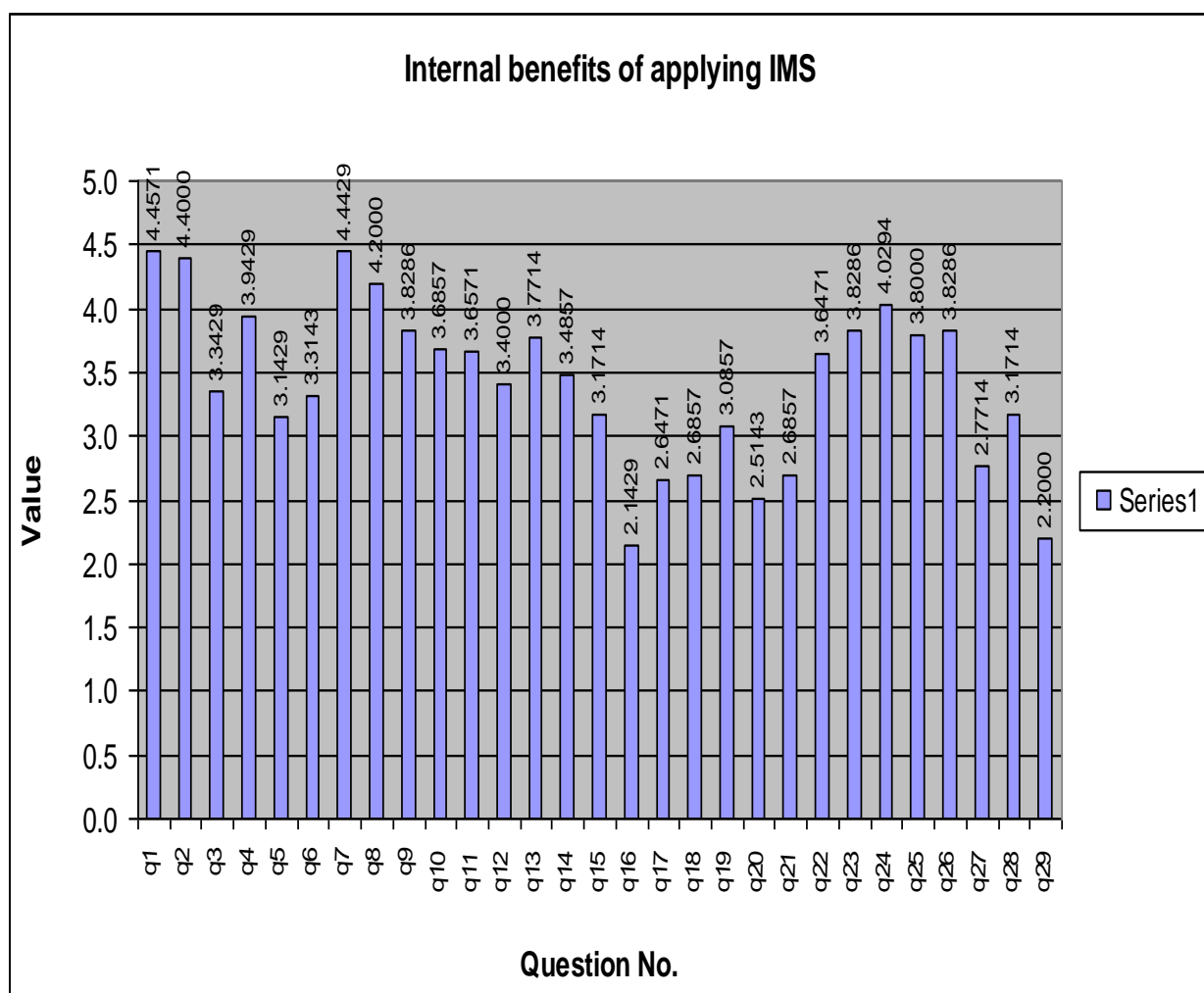
	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10
N Valid	70	70	70	70	70	70	70	70	70	70
Missing	0	0	0	0	0	0	0	0	0	0
Mean	4.4571	4.4000	3.3429	3.9429	3.1429	3.3143	4.4429	4.2000	3.8286	3.6857
Std. Deviation	.65244	.84098	1.15327	.75921	.96738	1.17391	.65132	.79126	1.03520	.79021
Minimum	3.00	2.00	2.00	3.00	2.00	2.00	3.00	3.00	2.00	2.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

(Table 2) Internal benefits Analysis Statistics (Questions 11:20) survey results

	q11	q12	q13	q14	q15	q16	q17	q18	q19	q20
N Valid	70	70	35	35	35	35	34	35	35	35
Missing	0	0	35	35	35	35	36	35	35	35
Mean	3.6571	3.4000	3.7714	3.4857	3.1714	2.1429	2.6471	2.6857	3.0857	2.5143
Std. Deviation	1.01989	.73030	.80753	.98134	.78537	.91210	.88360	1.15737	.91944	1.54104
Minimum	1.00	2.00	3.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	5.00

(Table 3) Internal benefits Analysis Statistics (Questions 21:29) survey results

	q21	q22	q23	q24	q25	q26	q27	q28	q29
N Valid	35	34	35	34	35	35	35	35	35
Missing	35	36	35	36	35	35	35	35	35
Mean	2.6857	3.6471	3.8286	4.0294	3.8000	3.8286	2.7714	3.1714	2.2000
Std. Deviation	.75815	.81212	1.20014	.86988	1.30158	1.01419	.84316	1.65362	1.02326
Minimum	2.00	2.00	2.00	3.00	2.00	2.00	2.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00



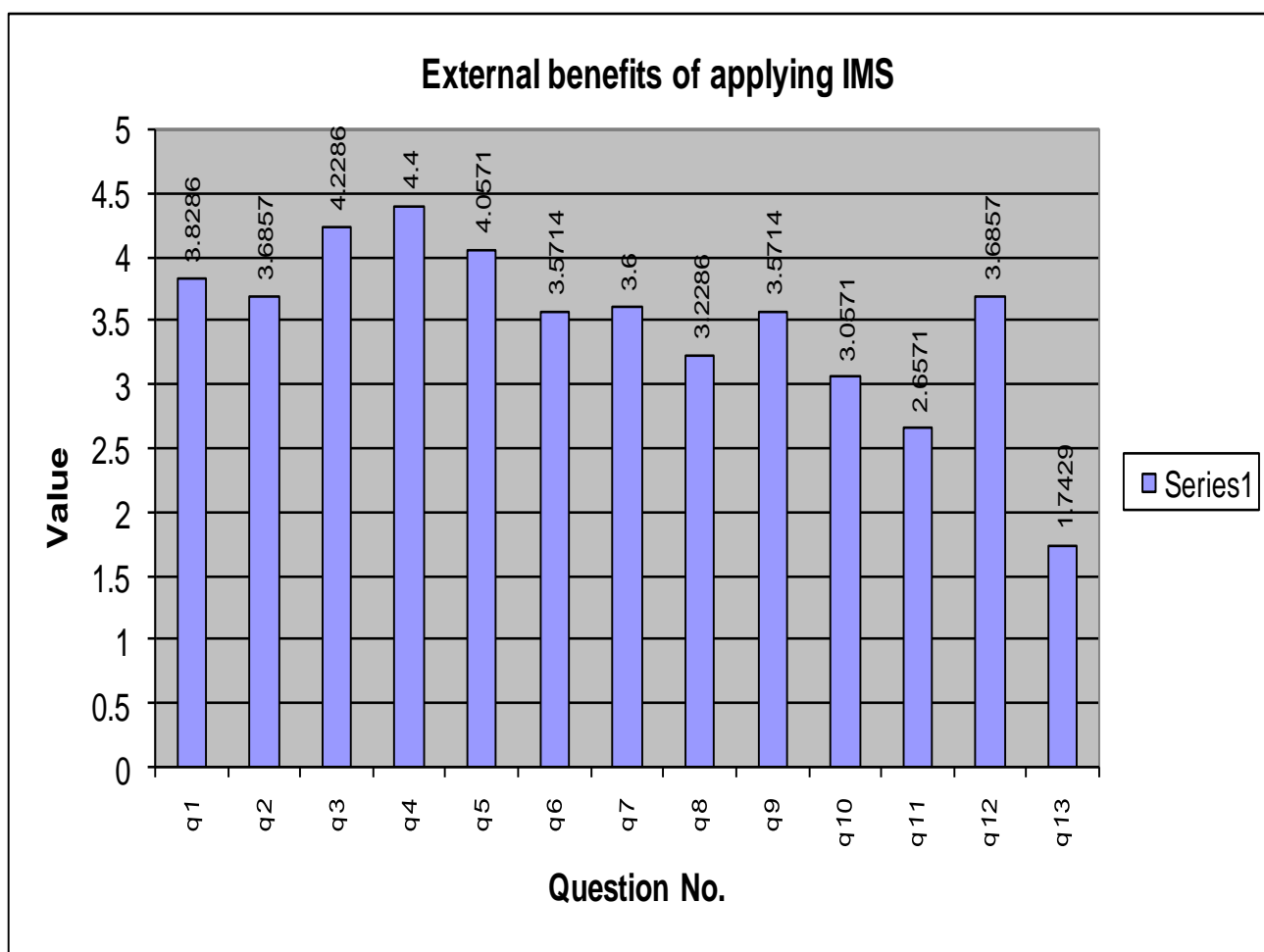
(Figure: 2) Internal benefits Analysis chart

3.3 External benefits of applying integration management system:

The following tables illustrate and summarize the results of the statistical adjustment based on the survey results:

(Table 4) External benefits Analysis Statistics (Questions 1:13) survey results

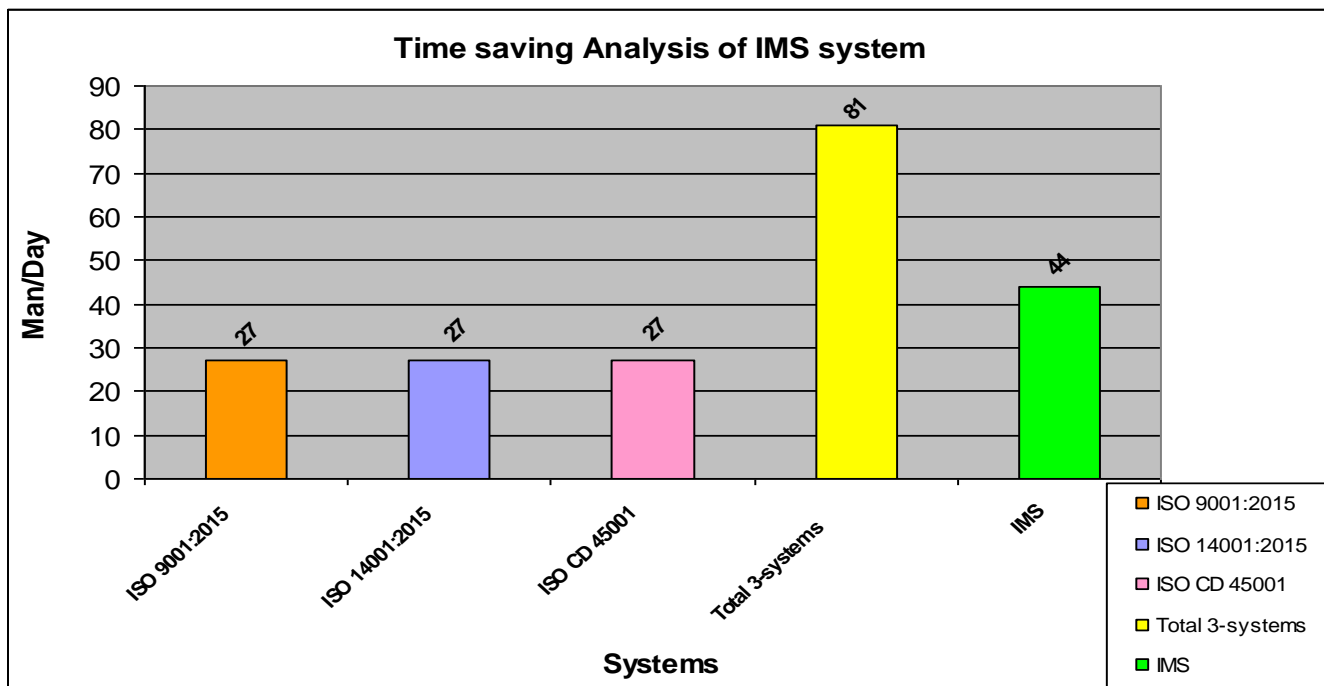
	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10	q11	q12	q13
N Valid	35	35	35	35	35	35	35	35	35	35	35	35	35
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean	3.8286	3.6857	4.2286	4.4000	4.0571	3.5714	3.6000	3.2286	3.5714	3.0571	2.6571	3.6857	1.7429
Std. Deviation	.78537	1.05081	.64561	.60391	.63906	.88403	.69452	.94202	.73907	.96841	.68354	1.02244	.65722
Minimum	3.00	2.00	3.00	3.00	3.00	2.00	3.00	2.00	3.00	2.00	2.00	2.00	1.00
Maximum	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00



(Figure: 3) External benefits Analysis

3.4 Time saving Analysis:

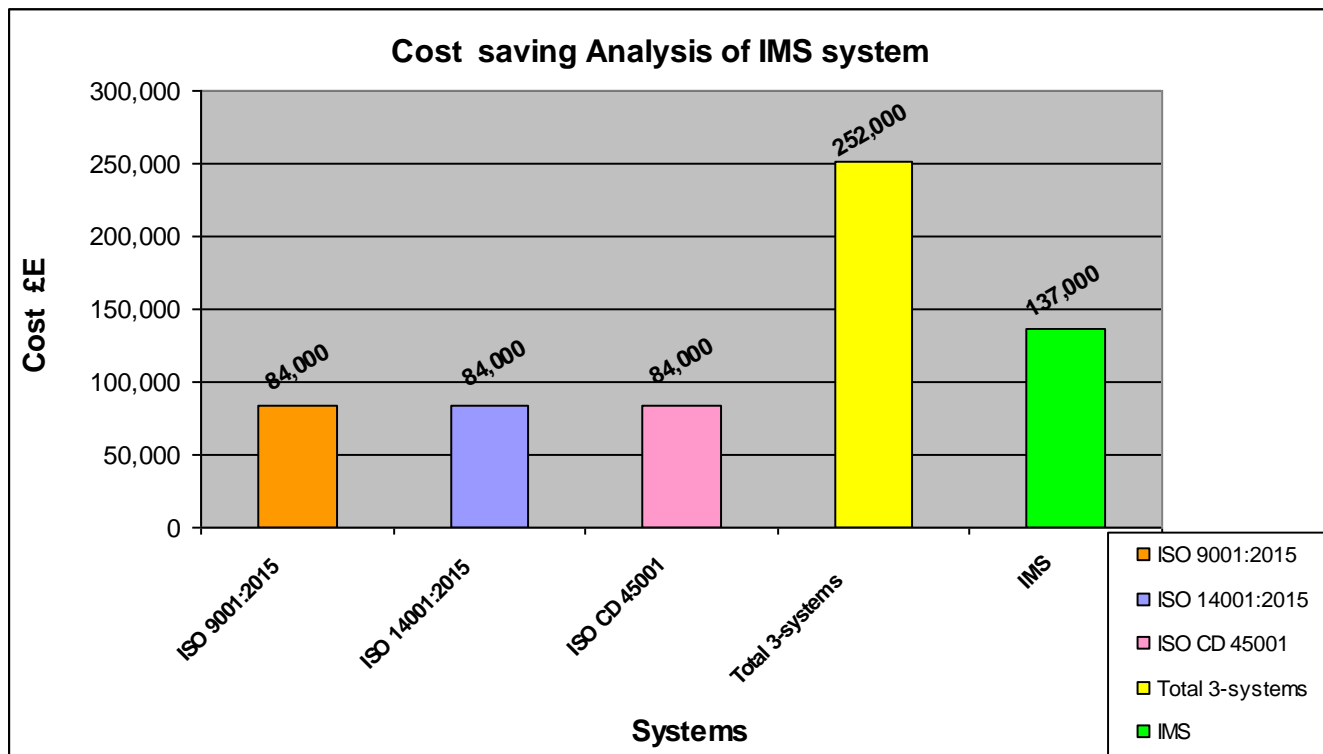
Fig.4 illustrates and summarizes the results of Time saving Analysis



(Figure: 4) Time saving Analysis

3.5 Cost saving Analysis:

Fig.5 illustrates and summarizes the results of Cost saving Analysis



(Figure: 5) Cost saving Analysis

4 - Conclusions, Recommendations and Suggestions for further Research:

4.1 Conclusions:

An analysis of the content of this chapter provides the basis for the following conclusions:

1. Integrated management system can apply to different standardized management systems related to various areas of an organization's activity. New versions of ISO management system standards are similar to one another the structures of their requirements are concerned. The currently observed phenomenon of the convergence of management system standards facilitates the integration of systems.
2. The integration of management systems can be facilitated through the identification of the common requirements of management system standards and for the search for integrating solutions.
3. The companies that already have a system of management they don't need to do much to get certificated in new ISO management systems. There is lot to evaluate, but little changes are needed to actually to get the certificate.
4. The integration of management systems is a very important tool to reduce the complexity of enterprise management system and therefore it is becoming more and more important.
5. The Internal advantages in this study are summarized:
 - a. Avoiding duplication of procedures and work instruction (Less conflicts).
 - b. Reduced cost and time (system, certification and verification)

4.2 - Recommendations:

Based on the major findings of the study, the following recommendations can be made:

1. The researcher would recommend extensively applying the integrated management systems in the industrial companies to improve their performance especially after harmonized the new standards.
2. The researcher would recommend the top management should present very high levels of commitment to lead their units towards excellence.
3. The researcher would recommend that R&D (research and development department) in enterprise extensively continue to provide researchers by necessary data and information to improve their performance.
4. Some requirements, such as sub-classes 5.1.2 (Customer focus), and sub-classes 6.1 (Actions to address risks and opportunities) are achieved by doing other things in the Management System. You wouldn't necessarily have to attack the requirement directly because it makes more sense to address it through related processes.
5. It is Useless to try to identify risks and opportunities before implementing earlier requirements of ISO 2015 like clauses 4.1 and 4.2 and brainstorm all the risks and opportunities within the scope of the MS.

4.3 Suggestions for further Research:

Based on the experience of this study, the following implications for further research study can be suggested:

1. The further research needs to Study all the impact of applying integrated management systems on organizational performance undertaking external auditors and consultant.
2. This study was completed according to draft of ISO/CD 45001 and before issue of ISO 45001:2016; the study can be conduct in other study after issues of ISO 45001:2016 according to final standard.

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