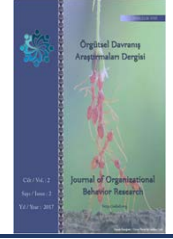




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## INNOVATION AUDIT IN ECONOMIC FIRMS: A PRACTICAL CASE STUDY IN AN IRANIAN COMPANY

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### ABSTRACT

*Innovation has become increasingly vital for achieving and maintaining competitive advantage in today's complex and uncertain business world. Business pioneers and market leaders continuously strive to improve their innovation capability. Innovation Auditing, as a relatively new and interesting topic in the field of Management of Knowledge and Technology, can be simply called the examination and measurement of existing status for the various aspects of Innovation Management in an organization, then an analytical comparison to the optimal or desired state; proposition of corrective actions and improvement suggestions in order to enhance the firm's performance where innovation is involved. In this practical study, after a quick, primary literature review on innovation, several models for innovation audit from reputable references in advanced countries are studied. Accordingly, based on the goals, requirements, limitations and company type; the most appropriate audit model was selected, audit performed, and eventually, by analyzing the results and identifying the gaps, strengths and weaknesses of the organization, a number of improvement suggestions and solutions are presented so that the audited organization – and possibly other similar companies - can improve their innovation management and relevant business performance results. This work is developed as a low-complexity, pragmatic and efficient experience so that a workable and tested innovation audit tool can become available to the industry.*

**Keywords:** Audit, Innovation, Competitive Advantage, Gap, Knowledge

### INTRODUCTION AND SIGNIFICANCE

Innovation, in all forms, comes with “Change” (Drucker, 1985), and is usually defined as: “provision of products, services, or processes to new markets through application of existing technology, or creation and commercialization of completely new technologies” (Khalil, 2000). Or, it can be said to be the capability to utilize modern tools and knowledge in order to provide new and updated product and service to the customer (Afuah, 1998).

Audits are organized, framed assessments, aimed at measuring performance, identification of successes and failures, and evaluating the actual status versus the desirable, planned condition (PMBOK, 2012; ISO 9001, 2015). Innovation Audit is a systematic review to identify the company's general status in different aspects of innovation management (Wiratmadja, 2017), and ultimately it is utilized to provide a workable solution for improvement. Innovation audits usually focus on innovation Inputs (people, resources, knowledge), Processes (structure, tools, techniques and procedures), and Output or innovation performance (higher sales and market share, increased customer satisfaction, managed and less business risks). The audit translates these subjective and qualitative topics into objective, comparative and measurable parameters by using a scoring system based on a questionnaire, interview or a combination of both.

(Chiesa, 1996; Karlsson et. al, 2010). This will significantly help finding firm's weaknesses and getting prepared for remedy through a comprehensive realistic, executable, measurable and profitable corrective action plan (ISO 9001, 2015). The innovation audit and its results can be a very helpful mean for directors of various companies to become more innovative and sketch their survival and growth plan. Naturally, even in the fast-paced and changing business environment of the 21st century, the dependency on innovation and creativity can widely differ from company A to company B. The more organic and technology-intensive the firm, there will be a higher need for flexibility and openness to change (Daft, 1992).

#### **Goals:**

1. Learning and practical application of the innovation audit tool for solving organizational problems and continual improvement,
2. Get a clear picture of the company's position in terms of innovation by identifying strengths and weaknesses by an Innovation-Gap Analysis (Karlsson et. al, 2010), assess the concerning environmental conditions; and the positive and negative factors impacting innovation internal and external to the organization,
3. Presenting solutions and improvement opportunities, with the focus on achieving competitive advantage, resulting in the growth and development of innovation and technology in and by the organization,
4. Testing a recognized audit tool in a practical and realistic case, so that the results and guidelines can be utilized by other businesses and researchers.

#### **Background and previous practical works:**

Innovation Audit has been dealt with by a number of researchers and institutions. Through the performed search and literature review, the following could be noticed as the most outstanding examples from the past:

1. Researches performed and published by the Fraunhofer Management Consultancy Firm in Stuttgart, Germany, concentrating on innovation and performance.
2. Research by Chiesa and others at British companies and the UK Department of Industry in 1996, which has been one of the most outstanding technical innovation audit models.
3. Research by Verhaeghe and Kfir in the knowledge-based service companies in South Africa in 2002.
4. Research at Thomas Danby College in the UK, 2004 (<https://web.archive.org/web/20111007004658/http://www.excellencegateway.org.uk/page.aspx?o=ferl.aclearn.resource.id6755>)
5. Research by Yam and others, 2004 on 213 Chinese companies in Beijing (Yam et al., 2004)
6. Austerman's research in NBank, Saxony, Germany, 2006 (ec.europa.eu/regional\_policy)
7. Coombs and others research on Innovation Audit through Knowledge Management Performance (KMP) in the UK in 1998
8. BMW Group Ireland, Audit Report, 2011. Using the concept of KIS (Knowledge Intensive Services)



9. Khamseh and Jalali on Innovation Assessment in Iranian Steel Industry, Karaj Azad University in 2013
10. Audit of Innovation Process as a case study in an electronics company in Indonesia by Wiratmadja et al, 2017.
11. The “Innovation Toolkit” by Derek Cheshire in the UK, 2009 onwards. It presents a very simple and fit-for-use audit toolkit with a RADAR model graphical result.

#### ***Selection of the suitable Audit Model:***

In order to select the appropriate model for auditing innovation at the company, it was necessary to consider several factors, particularly including scientific validity and reliability of the model, company characteristics (such as size, field of activity, etc.), suitability and usability of the model; and adaptation between the company and the model. In addition, results must be clear, understandable and purposeful, and all must be in accordance with the internal conditions of the case company and its environmental parameters. In general, the selection criteria for choosing the best matching innovation audit model can be summarized as follows:

- The author holds sufficient scientific and research credit, and the model has been published in an internationally-recognized journal.
- It is directly focused on and developed for the aim of innovation audit, providing realistic, objective and reliable results.
- The audit tool and any related accessories are readily available, with no intellectual property, political, and other similar limitations for use.

Considering the above three models were found and reviewed for use in the innovation audit of the company. The optimal model was chosen, and the audit work was carried out, accordingly.

In the following, a brief summary of the study, a short comparison and pros/cons of each model is explained:

#### ***Coombs - Hull - Peltu Audit Model (1998):***

- Does not directly address innovation audit, but uses an intermediate parameter called “Knowledge Management Practice” or KMP.
- Referring to the above, acquaintance with the KMP concept would be difficult and will add complication to the audit and report preparation. This is similar for other works such as Wiratmadja’s, using TIC and TIP (Wiratmadja et. al, 2017) which have added further intermediate parameters.
- Less process-orientation when compared to other models. Most systems have now possess a “Process Approach” instead of individual function view. For instance, Quality Management System ISO 9001 (edition 2000 onwards), EFQM Excellence Model, Project Management Body of Knowledge (edition 2004 onwards), and many other modern and internationally-recognized management models are process-oriented.
- The critical weakness of this method is its questionnaire, in which the importance of each parameter is determined by the person being questioned. Then the level of implementation is scored by the same person; resulting in a final score of each factor as the product of these two (i.e. Importance X Implementation). This inclusion of personal



opinion can cause a wide dispersion and non-uniformity in the results. For the same reason, defining corrective actions can also lose some reliability.

- Audit results are long and complex, that may turn it from an executive level, practical report into an excessively academic and mathematical one.

#### ***Chiesa Audit Model (1996):***

- The purpose of the model is solely and directly "the audit of technological innovation in the organization", fully in line with the goals of the work.
- The model is very process-oriented.
- It matches remarkably with the EFQM Organizational Excellence Model, which has been the most commonly used Excellence Model in Iran.
- Independently audits both the Process and the Performance of innovation, facilitating the classification and analysis of results in either area.
- It has been initially tested in 8 companies with a variety of activities in various fields (In the Coombs-Hull-Peltu model this number is 5).
- This audit model is has been numerously referred to by other researches (863 citations as per Google Scholar report, September, 2018)
- The questionnaire is readily available for use. There are 4 core and 3 enabling processes of innovation in the audit model, and these 7 processes are divided into 23 sub-processes.

#### ***Verhaege - Kfir Audit Model (2002):***

Fundamentally the Chiesa Model, but the model has a number of disadvantages that are summarized as follows:

- The relevant questionnaire has not been provided by the authors at the time of the present audit. Preparation of the questionnaire from the beginning, along with performing its necessary tests could seriously affect the timing and reliability.
- No significant difference with Chiesa model observed. However, tiny literature updates are present, but the basics are entirely the same.
- The model is developed after testing in only one company. Hence, its credibility for use in various companies working in different industrial sectors might be a matter of doubt.
- Additionally, that single company mentioned above is a fully knowledge-intensive one. So, using this model for less knowledge based firms was not recommended.

Eventually, and according to the above, the Chiesa Model was selected as the basis for carrying out the audit, However, in a few non-critical questions and wordings; some benchmarks were taken from the newer Verhaege - Kfir Model without any fundamental modification and alterations.

#### ***Performing the audit***

**The Company:** It is kept anonymous due to confidentiality reasons. Headquartered in Tehran, Iran, it has been active in project execution and delivery for two decades in the Iranian and international market in automotive, oil and gas, power, steel and mineral processing sectors. It has about 400 employees, mostly with academic level education.



**Sample Size:** In order to improve reliability of the gathered data, screening criteria were defined and applied on the population. Certainly, in such a company, not all the employees at all career levels are influential on innovation capability of the company. Even the recognition and interpretation of such literature would not be easy for the entire organization. Besides, there is also a time and resources constraint for performing such case study research; hence, a rationally-selected sample would be an optimal choice, both for the limitations, and for gaining credible results.

The criteria were set as holding at least a Bachelor's degree, together with over 5 years of work experience in the company. The aim was assuring adequate academic background, and sufficient experience and familiarity with the company's processes and performance results. That reduced the population to 250 employees. Of those, 30 were selected as the audit sample, and received the questionnaires. The composition of the sample group was 7 project and department managers, and the rest were engineers and experts. From gender point of view, 4 female and 26 male colleagues composed the sample. 30 out of 30 questionnaires were returned, resulting in a Response Rate of 100%. For facilitation of the work, each questionnaire contained a cover letter, accompanied with a short face-to-face verbal explanation; describing the purpose and basics, and assuring confidentiality of the gathered data (Bazargan, 1998).

According to the utilized model, Process Audit and Performance Audit were performed for each set of parameters. The best score for each parameter was 4, with 0 for the worst. Assuming 4 as the ideal state of each question parameter, the existing gap was calculated with the following formula:

$$G = (4 - S)$$

Where G is the Gap between existing and ideal status, and S is the corresponding Score gathered from the questionnaires. Average gap for each parameter was calculated using the average S number for that parameter.

In order to integrate the results and final analysis of the audit data, the scores of each group in the Process and Performance audits were cumulatively calculated. The Total Average Score was found using the below formula with allocating equal weight to Process and Performance:

$$\text{Total Average Score} = (\text{Process Score} + \text{Performance Score}) / 2$$

These findings along with the Total Gap for each audit parameter are tabulated in Table 1 below:

**Table 1: Average audit scores, with Gaps for each group and Total Gap**

Parameter	Average Process Audit Score	Average Performance Audit Score	Average Total Score	Total Gap
Product/Service Innovation	1.89	2.38	2.14	1.86
Development and Realization of Product/Service	2.06	1.66	1.86	2.14
Transfer of Technology and Innovation in Processes	2.23	1.53	1.88	2.12
Acquisition and Development of Technologies	2.23	1.57	1.90	2.10



Leadership	2.16	1.73	1.95	2.05
Resources	1.77	2.00	1.89	2.11
Systems and Tools	2.57	2.32	2.45	1.55
<b>SUM</b>	<b>14.91</b>	<b>13.19</b>	<b>14.07</b>	<b>13.93</b>
<b>Average</b>	<b>2.13</b>	<b>1.88</b>	<b>2.01</b>	<b>1.99</b>

In order to get a better view of these results, a Parteo Chart was developed as the following Chart 1.

Pareto Chart is a quality tool (PMBOK, 2012) which depicts the most serious and affecting items in a descending order. So, the most critical causes for each effect are known with simplicity. The close attention and remedial action by the managers and/or owners of the problem can be drawn to the most affecting points, which can result in reduced waste of time and resources, and more efficient performance:

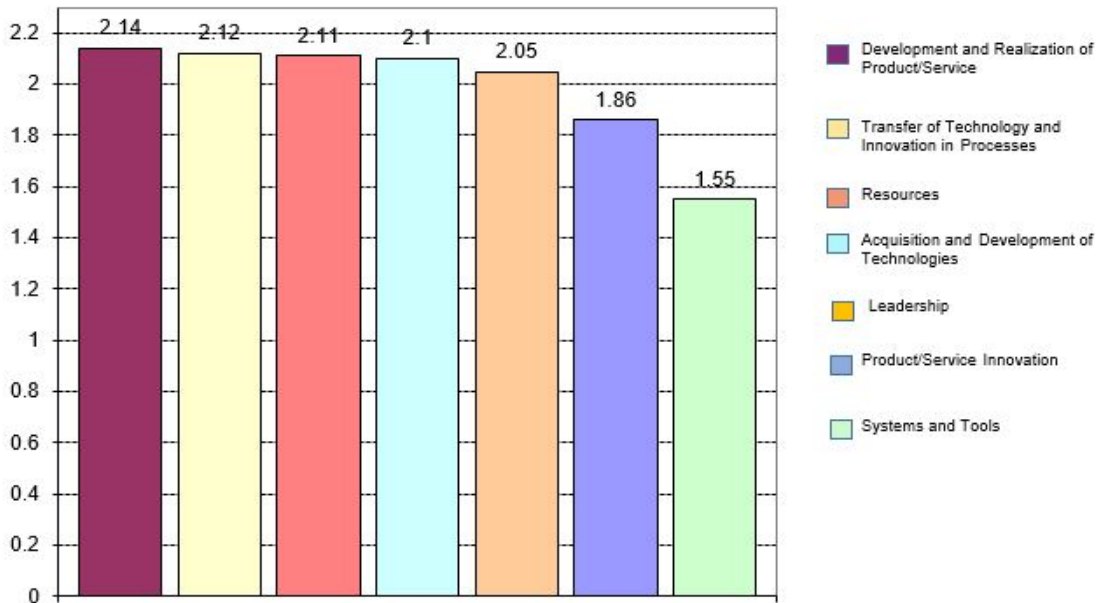


Chart 1: The Pareto Chart illustrating the Total Gaps in Innovation Audit

## DISCUSSION

**Analysis of the audit results:** The average audit score for the Process is about 13% higher than the average for Performance. This means that the audited company is doing better in terms of processes rather than in their innovation performance. As an example, “increased competitiveness” at the Performance questionnaire has gained remarkably weak scores.

The total average score is 2.01 out of 4.0, that if converted to a 0-100 scale, will represent a total score of 50.25, resulting in a total gap of 49.75. The company then falls in a "medium" level of innovation capability and results.

Looking at the Process Audit, we find that the highest score is obtained in the "Systems and Tools" section. This section also stood second place in Performance Audit. So, it can be stated that the company has been operating well in system implementation and preparation of tools. The weakest score in Process Auditing belongs to "Resources." And, In Performance Audit, the highest score belongs to “Product / Service Innovation”, while the lowest scores with a

negligible difference are "Transfer of Technology and Innovation in Processes"; and "Acquisition and Development of Technologies". The company's major weaknesses in the Process Audit are "Resources", "Product / Service Innovation" and "Development and Realization of Product/Service". Also in Performance Audit, the largest gaps lie in "Transfer of Technology and Innovation in Processes", "Acquisition and Development of Technologies", and "Development and Realization of Product/Service".

Now, we have practically identified the major weaknesses of the organization through a structured audit of the innovation processes and performance. It could also be seen that based on the Chiesa model, at the Process side; the company has more serious problems in the "core" processes, rather than "enabler" and support processes (Chiesa, 1996). These can sound an alarm for the organization for the waste and misuse of their resources; by false over-investment on the tools and systems, instead of focusing more effectively on the core and infrastructure for innovation, and its performance outcome.

Back to Chart 1, the Pareto Histogram represents the firm's most outstanding areas of problems and shortcomings in the following order of significance:

1. Development and Realization of Product/Service (Gap: 2.14)
2. Transfer of Technology and Innovation in Processes (Gap: 2.12)
3. Resources (Gap: 2.11)
4. Acquisition and Development of Technologies (Gap: 2.10)
5. Leadership (Gap: 2.05)
6. Product/Service Innovation (Gap: 1.86)
7. Systems and Tools (Gap: 1.55)

This confirms our above findings once more, that the Systems and Tools show the least total gap, while the Product/Service Development, and Transfer of Technology and Innovation stand on the top of gaps list. Another important point to consider is the very close difference between the gap scores, showing a diverse and spread range (the top 4 range from 2.14 to 2.10). This fact also calls for utmost attention, where not only one "top-of-the-pick", but multiple problems with nearly identical effects exist within the company; and must be dealt with simultaneously.

Table 2 represents the weakest scores for each parameter from the collected questionnaires. These items stand at first priority for Corrective/Remedial Action:

**Table 2: Weakest Audit Scores for both Process and Performance**

Main Title (Group)	Weakest item in Process Audit (Score)	Weakest item in Performance Audit (Score)
<b>Development and Realization of Product/Service</b>	Teamwork and organization (1.93)	Average time from idea to implementation (1.10)
<b>Transfer of Technology and Innovation in Processes</b>	Continual Improvement (1.83)	Average corrective action suggestion per employee, and number of implemented suggestions (1.20)
<b>Resources</b>	Human Resources (1.70)	Number of projects which have been cancelled or delayed for lack of financial resources in the past 3 years (1.77)



Acquisition and Development of Technologies	Selection, development and sourcing of technology (1.97)	Number of inventions and Patents created in the past 3 years (1.43)
Leadership	Processes for creating and implementing innovation (1.93)	Number of employees aware of innovation policy and values (1.73)
Product/Service Innovation	Planning for existing product/service innovation (1.57)	Customer Satisfaction (fulfilment of needs, product diversity) (2.06)
Systems and Tools	Quality Assurance (2.43)	Number of projects using quality tools such as FMEA or QFD, and number of employees trained for design, creativity and innovation (1.43)

### ***Recommendations for improvement and Corrective Actions:***

Analyzing the results obtained from the audit, we can identify the major weaknesses, and define remedial actions so that the innovation capacity and performance at the company is enhanced. For proposing corrective actions and improvement suggestions for filling the gaps that were found, we primarily refer to some credible relevant literature and past researches in order to define a number of general points for improvement; then at the next step we specifically offer our prescriptions for the audited company.

The report from a research performed by the Boston Consulting Group on multiple reputable companies and about 3,000 world-class managers published in August 2008, found the following two factors as the most important ones for success of innovation in organizations:

1. Leadership support
2. Right organizational approach

The organization leader must be someone with the innovation improvement mindset, and capable of implementing the ideas and plans to tangible, valued results. Successful innovation leaders are not necessarily the most creative persons, but they are instead able to lead large and complex organizations, embedding new, productive cultures and processes in them; while providing their necessary tools and support. The Boston Consulting Group lists 5 characteristics for the leaders of successful innovative organizations (Haanaes, 2008):

1. Ability to tolerate ambiguity and complexity,
2. Ability to assess and tolerate risks,
3. Ability to create a balance between passion and reality,
4. Ability and openness to change,
5. Ability to win trust and respect (even from pessimists).

Any company, of any size, culture and organizational structure can have the capacity to become an innovative company. In the meantime, it should not be forgotten that organizational culture is a very powerful and affecting context that can alter, improve or freeze many actions and measures (Robbins, 2005). This calls for adopting a right organizational approach and arrangement, so that the entire organizations have aligned attitudes towards goals, strategies, measures, and commitment to innovation. This can be realized by concentrating on three points (Haanaes, 2008):





1. Goals and objectives of Innovation: Many companies lack a clear answer to this. They also might not know whether they are doing - or they must do - product or process innovation.
2. Employees: What are our key and best employees doing? And how much it affects our innovation capability?
3. Measurement and Metering: Necessary for maintaining both the input and direct/indirect outputs and results of innovation. For instance, company brand can be considered as an indirect result from the innovation, which also needs regular measurement and care.

Loewe and Dominiquini, propose 3 recommendations for companies willing to be innovative:

1. Do not just focus on remedy of symptoms,
2. Do not focus on only one root cause for innovation failure,
3. Do not just copy/paste the best practices, without considering your organization and environmental status (Loewe and Dominiquini, 2006).

“Culture” can be said to be the most affecting factor in organizational innovation. In an organization possessing an innovative culture, employees are motivated and confident to test new and emerging issues. They own the necessary knowledge, skills and abilities to create and implement their ideas. Such organizations allow their employees to search, find, test and fail; while the Senior Management supports them. Such an organization must have structures and processes that facilitate the transformation of ideas into new products and services, improve and integrate innovation (Loewe and Dominiquini, 2006).

According to the studies by the Institute of Occupational Psychology (IWP), it can become possible to create such a culture in a company through the implementation of 12 major approaches (Woods, 2003):

1. Hiring Innovative Employees: They usually have four main characteristics, including Open and positive attitudes towards change, Active participation in change, Flexible approach to work, and Willingness to do things in a different way.
2. Teaching Creativity and Innovation: Creativity can be learned and improved by many techniques such as brainstorming, lateral thinking, etc. It must be mentioned that such techniques only contribute to the “creation” of ideas; and certainly top management support and the right organizational atmosphere would be necessary for “implementing” them into tangible results such as products or services.
3. A Learning Culture: A cradle-to-grave learning culture in the firm would encourage people to run a developing environment.
4. Employee Empowerment: By delegation, job enrichment or developing self-governing teams.
5. Idea absorption system: Hunting valuable ideas which exist within the company via measures such as Suggestion Systems, etc.
6. Encouraging managers to support Innovations by other employees: Managers who support innovation, share their knowledge and experience with employees, and enhance their motivation and confidence by their support and appropriate feedback.
7. Turning Creativity into a Necessity: IWP studies showed that taking Creativity as a serious necessity in the organization will enhance innovation. Otherwise, innovation will gradually fade out through time (Woods, 2003).



8. Promoting employee participation in Decision Making: A study on 500 companies in the UK came into the conclusion that companies with a collaborative and participative atmosphere, in which ideas are exchanged and discussed about before implementing; innovation is improved (Woods, 2003).
9. Appropriate Rewarding System for Innovation: Recognition and rewards can improve employee motivation for innovation.
10. Risk-taking as a desirable practice: The organization should be patient about failure and encourage their employees to face with risks and uncertainties. It is quite vital to learn from the past experience and provide adequate feedback so that failures are not repeated.
11. Encouraging R&D investment: Usually, the higher the investment in R & D in the organization, the higher the level of innovation is observed.
12. Benchmarking: It can be done externally (with competitors or other industrial sectors) or internally (comparison between departments within the company) and can make the company more innovative.

In July 2007, Paul Sloane proposed 10 fundamental measures for enhancing innovation in organizations, published in the Director magazine (Sloane, 2007):

1. Create a clear vision for change,
2. Battle the fear of change,
3. Think like a daring investor,
4. Have a dynamic Suggestion System in place,
5. Break the rules,
6. Assign 2 jobs to each person,
7. Collaborate,
8. Embrace failure,
9. Be focused, energetic and bold.

After reviewing the existing literature and researches for general enhancement of innovation, and integrating them with the results of the performed audit and personal observations; we can more specifically recommend the following actions for the company in order to fill the current gaps and improve their innovation capabilities. It has to be noted that direct personal experience and interviewing the employees have been utilized for enrichment of the following recommendations:

1. Encouraging delegation and flexibility in organizational structure, increasing transparency, along with definition and adjustment of the people's roles, responsibilities and authority level. Improve employee involvement and team work so that they realize their importance for the organization, and reduce obstacles for sharing their knowledge and experience with others.
2. Increasing organizational agility by continual process review, reducing red-tape and bureaucratic procedures; leading into faster decision-making and eventually shorter idea-to-market time.
3. Enhancing "Continual Improvement" mindset among managers and directors (ISO 9001, 2015), rather than maintaining the status-quo. "Innovation" and "Change" are mutually and inevitably bound (Drucker, 1985).



4. An effective Suggestion System can improve employee engagement and sense of ownership; which is vital to the company growth. However, the delicacy for implementation and running such a system should not be ignored.
5. A fresh approach to human capital development must be in place. Company hires the employees mostly according to their education quality, and even some intelligence and personality tests (such as IQ, MBTI, language test) are carried out. But in reality and after being employed, not much of that intelligence is being effectively used. Almost no creativity techniques utilized for problem solving and innovation (such as TRIZ, Brainstorming, etc.), and categorization of creative and innovative people not properly implemented. The company should take a more efficient approach towards their valuable human capital.
6. Project budgets (especially R&D projects) to be allocated more purposefully and with justifiable priority regarding the company's strategic goals. We can see from the audit results that deficiency in financial support of the projects has been, and can turn; into a more serious cause for project failure.
7. The firm should have a solid and value-creating relationship with external parties such as scientific associations, universities, research centers and professional institutions. Some measures have been taken so far, but our audit results showed that they are not effectively managed and the potentials are not well used.
8. The company owns some outstanding capabilities such as very well- educated employees, hi-tech experience, and available resources such as fine hardware and software. But, they have only registered hand-counted patents and certification of invention. Apparently, the competitive advantage resulting from registered knowledge and intellectual property is not taken so seriously by the personnel. However, it must be noted that environmental status, i.e. improper attention to the intellectual property rights has intensified it.
9. The scores for employee awareness and commitment do not represent a very promising result. The company leaders must communicate more effectively with the personnel, taking the wheel for innovation and improvement by their hands, enhancing trust and awareness among organization.
10. Product and service innovation at the firm needs to be enhanced by improved communication with the existing and potential customers, understanding their needs and demands, and receiving their feedback and areas of improvement through an implemented CRM (Customer Relationship Management) system. Clear and sound understanding of needs can lead to better and more result-oriented innovation within the company.
11. Although an Integrated Management System (IMS, including quality, environmental and health/safety management) is implemented and working at the company, the employees do not have the opinion of such a system being effective and helpful for achievement of total and comprehensive quality management. The company needs to spend more time and resources on training and use of quality tools, creativity techniques, innovation skills and knowledge management within their different organizational levels.



12. And perhaps most important recommended action is shifting the organizational culture towards an innovation-supporting one, with planned and executed motivation plans for involvement of employees. Innovation has to be believed and demonstrated as a strategic priority. A number of symptoms such as increased human resource turn-over rate shall sound an alarm for the company to embrace creativity and innovation, and support their innovative key employees by creating a positive organizational culture which supports strategic assets and outcomes.

## CONCLUSION

Innovation is a main source of survival and growth for a large number of businesses. The capability for change and innovation in an organization is an important strategic asset, hence should be measured and maintained.

Carrying out the innovation audit by available audit tools can reveal the existing gaps, and help necessary corrective measures to be planned and implemented. In this manner, the firm can retain their competitive advantages and ability to survive and improve in the fast-changing business environment.

The present paper is a sample practical audit report in an Iranian company, with the results being presented, analyzed, and recommendations for improvement – both general and company specific – were given. The author hopes that this paper can become a suitable guideline for companies and organizations all over the world, helping the businesses maintain their sustainable growth and competitiveness.

### *Further Research Recommendations:*

1. Repeated audit in the same company in different time scales, and analyzing the trend.
2. Performing the same audit in different companies and industrial sectors, similar to the work done by Sanchez in Catalan industries with a cluster-specific approach (Sanchez, 2011).
3. In-depth audit for the highest gaps, finding the root-causes by various techniques (PMBOK, 2012; ISO 9001, 2015) and remedy them.
4. Developing a tailor-made Audit Model for Iranian companies, regarding the particular social, legal and environmental factors. Guidance can be taken from the work done by Khamseh and Jalali in 2013.
5. Automation of Innovation Audit by developing an audit software or smartphone application, so that such audit can be done anytime, anywhere, with more precision and analytic capacity, integration of collected data and results and developing a reliable, helpful knowledge base for the businesses. A similar work has been done by Cheshire as the “Innovation Toolkit” (Cheshire, 2009).

## References

- A Guide to the Project Management Body of Knowledge (PMBOK Guide), 5th edition, Project Management Institute (www.pmi.org), 2012
- Afuah, A, “Innovation Management: Strategies, implementation and profits”, Oxford University Press, 1998



- Bazargan, A., "Research Methods in Behavioral Science", Agah publications, Tehran, Iran, 1998
- BMW Group Ireland, "Audit of the Innovation System in the Border, Midland and Western Region: An Evaluation of a Regional Knowledge Economy", May 2011.
- Cheshire, Derek, "Innovation Toolkit"; Creative4Business, www.derekcheshire.com, 2009
- Chiesa, V., Coughlan, P., Voss, C.; "Development of a technical innovation audit", Journal of Product Innovation Management, Vol. 13, Issue 2, March 1996, P.105-136
- Coombs, R., Hull, R., Peltu, M.; "Knowledge Management Practices for Innovation: An Audit Tool for Improvement", CRIC, The University of Manchester, June 1998
- Daft, R., "Organizational Theory and Design", New York, West Publishing Company, 1992
- Drucker, P.F. "Innovative and Entrepreneurship, Practice and Principles", Harper & Row Publishers, 1985
- Fraunhofer Management Consultants, <https://blog.iao.fraunhofer.de/tag/innovation-audit/>, Germany, 2014.
- Haanaes, A., Sirkin, M., "Innovation 2008: Is the tide turning?", Boston Consulting Group senior management survey, August 2008 (www.bcg.com)
- ISO 9001, Quality Management Systems – Requirements, International Organization for Standardization, 2015
- Karlsson, H., Johnsson, M., Backström, T., "Interview Supported Innovation Audit: how does a complementary interview affect the understanding of an innovation audits results when the interview is based on the audit statements"; Conference Paper, ISPIM - International Society for Professional Innovation Management, 2010
- Khalil, T.; "Management of Technology: The Key to Competitiveness and Wealth Creation". McGraw-Hill, 2000
- Khamseh, A., Jalali, F.; "Developing a Model for Innovation Assessment in Iranian Steel Industry", European Online Journal of Natural and Social Sciences 2013; vol.2, No. 3(s), pp. 1763-1768
- Loewe, P., and Dominiquini, J., "Overcoming the barriers to effective innovation", Strategy & Leadership, Vol.34, No.1, 2006
- Robbins, S., "Essentials of Organizational Behavior", N.J, Prentice Hall, 2005
- Sánchez, A., Lago, A., Ferràs, X, Ribera, J., "Innovation Management Practices, Strategic Adaptation, and Business Results: Evidence from the Electronics Industry", Journal of Technology Management & Innovation, Volume 6, Issue 2, 2011
- Sloane, P., "Ten ways to boost innovation", Director Magazine (www.director.co.uk), July 2007
- Verhaeghe, A, Kfir, R., "Managing innovation in a Knowledge Intensive Technology Organization (KITO)", R&D Management, 32, 5, 2002



Wiratmadja, I., Prihantoro, F.W., Kurniawati, A., “Innovation Process Audit Model: A Case Study in an Electronics Company”, Conference Paper at The 17th Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS), Taipei, 2017

Wood, S., “Developing an innovation culture: Implications from research”, IWP/ESRC, University of Sheffield, March 2003

Yam, R.C., Guan, J.C., Pun, K.F., Tang, E.P.; “An audit of technological innovation capabilities in Chinese firms: some empirical findings in Beijing”, China Research policy, 33 (8) (2004), pp. 1123-1140

