

Business Excellence In Industry 4.0 Sub-Track: Operations & SCM

Theme: Total Quality Management

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Abstract

‘Business Excellence’ as a concept is based on the principles of Total Quality Management. Business Excellence aims at assessing and enhancing the overall organizational performance. It lays emphasis on the performance of all aspects of a business organization and focuses on the welfare of all stakeholders. Several Business Excellence Models or frameworks exist globally as well as in India. In India, most of these frameworks are adapted versions of global frameworks. These frameworks provide guidance to the organizations in their journey towards overall excellence. These frameworks have been applied, tested and have proven to be very effective in achieving the desired business results and stakeholder value. However, with the advent of Industry 4.0, the industry systems & the business environment are changing significantly. This research paper attempts to comment on the relevance of the existing Business Excellence Frameworks in Industry 4.0. It also tries to explore the relationship between the maturity of the organization in implementing a Business Excellence Framework and its level of readiness for adopting Industry 4.0. The research methodology largely relies on sampling, collection of primary data using a questionnaire, followed by quantitative analysis, validation of results by qualitative analysis and conclusions. The study reveals that the existing Business Excellence Frameworks are robust enough and will remain relevant in Industry 4.0 environment. It also highlights that there is a low degree of association between the maturity of an organization in implementing a Framework and the readiness of the organization to adopt Industry 4.0.

Keywords: Business Excellence, Business Excellence Frameworks, Total Quality Management, Organizational performance, Industry 4.0.

INTRODUCTION

‘Business Excellence’ involves making use of principles and tools of Total Quality Management in business management. The ultimate goal is to assess and enhance the overall business performance of the organization.

It is based on certain core values and principles such as Achieving Balanced Results; Adding Value for the Customers; Leading with Vision, Inspiration & Integrity; Managing by Processes; Succeeding through People, Nurturing Creativity & Innovation; Building Partnerships and Taking Responsibility for a Sustainable Future.

In order to guide the organization’s management towards achieving Business Excellence, most of the organizations have a well-designed framework or model in place, or refer to a globally accepted Award framework or a framework given by the Government or an industry body.

Generally, these models are universally applicable i.e. they are not industry-specific or organizational size-specific.

The effectiveness of these Models in achieving the expected business results / outcomes has been tested and has been quite high, as has been the experience of several organizations till date.

However, in the context of Industry 4.0, Business Excellence as a function and their Models or Frameworks have to still stand strong and effective.

OBJECTIVES:

1. To study the relationship between maturity of an organization in implementation of a Business Excellence Framework and its readiness to adopt Industry 4.0.
2. To understand the success factors of organizations in the age of Industry 4.0.
3. To discuss the relevance of the existing Business Excellence Frameworks in the context of Industry 4.0.

LITERATURE REVIEW

Business Excellence Models / Frameworks:

McAdam & Leonard (2005) have written that the concept of ‘Business Excellence’ has evolved from the concept of ‘Total Quality Management (TQM)’ after World War-II. It believes in an-organization wide Quality Culture which leads to excellent Business practices & hence, achievement of excellent business results consistently.

The first known Business Excellence Award Framework i.e. the Deming Prize was constituted in Japan in 1951.

Two prominent Business Excellence Awards i.e. Malcolm Baldrige National Quality Award of the USA and the European Foundation for Quality Management (EFQM) Award of the European Union came into existence in 1988 and 1990 respectively.

It is estimated that there are currently 94 National Quality/Business Excellence (BE) Awards used in 83 countries.

Some of the most commonly used Business Excellence Frameworks in India are the CII-EXIM Bank Award Framework for Business Excellence which is based on the EFQM Award of Europe; the IMC Ramkrishna Bajaj National Quality Award and the Rajiv Gandhi National Quality Award both based on the Malcolm Baldrige National Quality Award framework of the USA. Some business groups such as the Tata group and the Mahindra Group have their own Business Excellence Frameworks namely the Tata Business Excellence Model and the The Mahindra Way respectively. The aim of these awards is to enhance the competitiveness of business organizations in India and to recognize the organisations which have achieved excellence. These Business Excellence frameworks are non-prescriptive in nature and applicable to organizations irrespective of their industry or sector and size.

Haffer Rafal & Kristensen Kai (2008) are of the opinion that most of these frameworks are based on the Deming’s Plan-Do-Check-Act (PDCA) cycle concept and the assessment is performed on certain pre-defined and pre-communicated criteria and the achievement of business results.

Asif Muhammad, Searcy Cory, Garvare Rickard and Ahmed Niaz (2011) have shared that most of the Business Excellence frameworks typically give assessment criteria such as Leadership, Strategic Planning, HR Focus, Customer Focus, Knowledge Management, Operations & Process Focus and Business Results.

Industry 4.0

Hizam-Hanafiah Mohd, Soomro Mansoor Ahmed and Abdullah Nor Liza (2020) have opined that Industry 4.0 (Fourth Industrial Revolution) involves digitization of most of the industrial inputs, systems, output and the environment in order to achieve a strong integration between

physical and virtual worlds. Prominent technologies such as Internet of Things (IoT), Block Chain, Artificial Intelligence (AI), Robotics, Sensor-based controls etc. will form the core of Industry 4.0. It is extremely important to understand the readiness levels of the organizations to adopt Industry 4.0.

Success Factors of organizations in the age of Industry 4.0

Jaspal Singh (2018) has enlisted factors which make organizations successful in the era of Industry 4.0. The prominent amongst these factors are the Organizational culture, Organizational Structure and Application of a System driven approach. An Organizational culture which encourages learning & innovation especially in Technology, a flat organization & an organization which follows a Model or framework for achieving excellence is most likely going to succeed in its endeavour of adopting & implementing Industry 4.0.

RESEARCH GAP

Through Literature Review, it is evident that past research papers have addressed the concept of 'Business Excellence' as well as many contemporary research papers have been published on several facets of 'Industry 4.0'. However, there is a research gap on the relevance of Business Excellence in Industry 4.0. Also, there is no prior research available on the relationship between maturity of an organization in Business Excellence and the readiness of the organization in implementing Industry 4.0 successfully. Hence, the researchers have made an attempt to perform research on the same.

RESEARCH METHODOLOGY

The Research Design is selected based on the research objectives to be achieved. The data collected is mainly Primary.

The researchers followed a non-probability sampling technique namely 'Convenience Sampling'. The sample organizations were companies known to be using Business Excellence frameworks. Sampling unit was an 'Organization which uses a Business Excellence Framework'. A sample size of 30 was targeted, 48 companies were contacted and actual response received was 36. The respondents were middle or top management professionals, who have participated in the Business Excellence initiative of the organization. The Research instrument was a Questionnaire, which contained a combination of closed ended and open ended questions. For closed ended responses, a 7- point Likert scale was used. Confidentiality of the identity of the respondent and the company was assured before collecting responses. Most of the responses were recorded based on telephonic conversation or online meetings with the respondents.

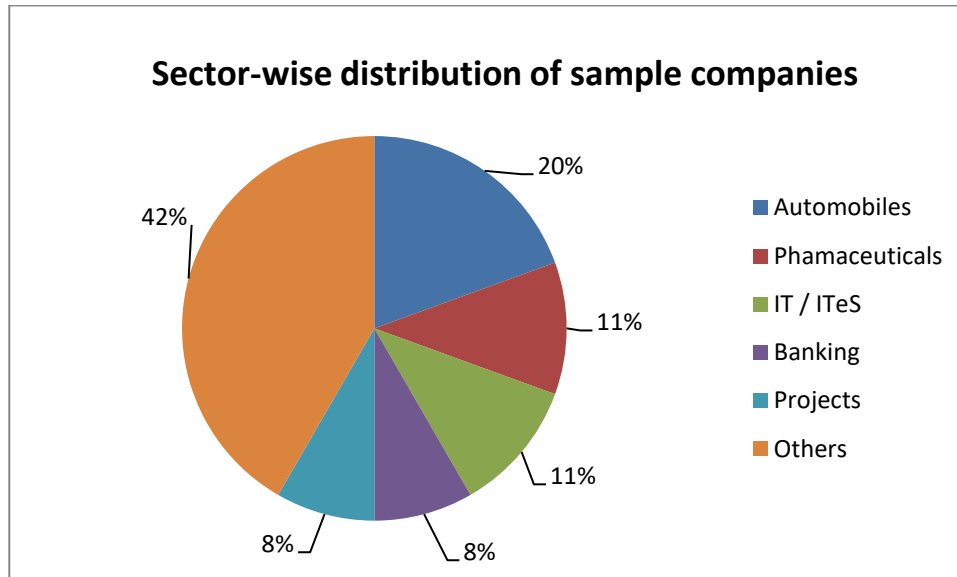
Descriptive statistics, graphical tools for data presentation and Correlation analysis were used. Results were validated using qualitative analysis. Findings & conclusions along with scope for future research discussed.

DATA ANALYSIS

Profile of the sample companies:

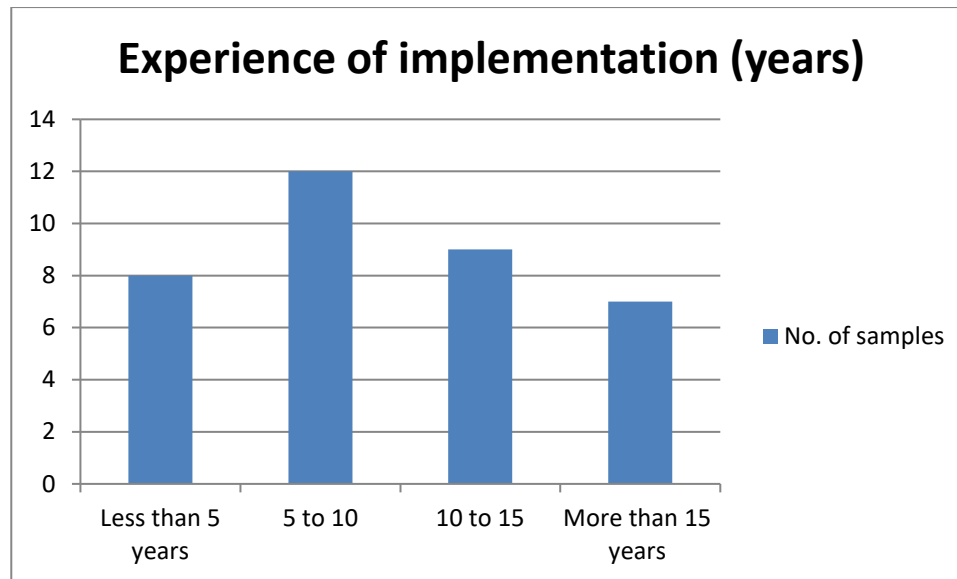
Sector	No. of Samples
Automobiles / Auto ancillary	7
Pharmaceuticals	4

IT / ITeS	4
Banking	3
Projects	3
Others	15
Total	36



Years of Experience of Implementing Business Excellence Framework

Years of experience	No. of Samples
Less than 5 years	8
5 to 10	12
10 to 15	9
More than 15 years	7



Parameter / Question	Mean	Median	Mode	Range	Standard Deviation	Likert Scale
1. Awareness regarding Industry 4.0	5.03	5	4	4	1.42	1- Extremely low awareness, 7 – Extremely high awareness
2. Awareness regarding Business Excellence	6.32	6	5	2	0.54	1- Extremely low awareness, 7 – Extremely high awareness
3. Years of implementation of the Business Excellence framework in the organization (Maturity)	9.73	10	9	16	4.32	NA
4. Readiness of the organization to implement Industry 4.0	5.86	5	5	5	0.64	1 – Not at all ready, 7 – Totally ready
5. Relevance of the Business Excellence framework in Industry 4.0 environment	5.63	6	6	2	0.76	1 – Very low robustness, 7- Very high robustness

Correlation Analysis between Maturity of the Business Excellence Framework and Readiness of the Organization to Implement Industry 4.0

The Correlation Coefficient between Maturity of the Business Excellence Framework and Readiness of the Organization to Implement Industry 4.0 is 0.2307.

FINDINGS

1. There is a high level of awareness regarding the concepts of Industry 4.0 as well as Business Excellence in the organizations.
2. The companies are also well aware of the key success factors to sustain and grow in the age of Industry 4.0 namely a learning culture, flat organizational structure and Business Excellence Model implementation.
3. There is a weak positive correlation between Maturity of the Business Excellence Framework and Readiness of the Organization to Implement Industry 4.0. Contrary to the expectation, companies having lower maturity i.e. less experience of implementing Business Excellence Frameworks also have a good level of readiness of implementing Industry 4.0 and practising it. After discussing with 5 of the sample respondents to validate this, it was understood that companies which are new to Business Excellence, also had strong systems in place and young workforce which were more technologically oriented and hence, had a good readiness level for Industry 4.0 adoption.
4. Based on the conversation with respondents, most of the respondents are of the opinion that the Business Excellence Frameworks, their core values and their assessment criteria are robust enough and are still relevant in Industry 4.0. They shall successfully guide the organizations to achieve excellence in Industry 4.0 as well.

SCOPE FOR FURTHER RESEARCH

In this research paper, the researchers have made an attempt to discuss the relevance of the existing Business Excellence Frameworks in the context of Industry 4.0. Further research may be carried out with reference to understanding the effectiveness of these frameworks in achieving the intended results in the Industry 4.0 environment.

Also, if the availability of time is greater, a researcher may adopt a Case-based approach and perform an in-depth qualitative research on the topic.

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