

Outcome of Innovations in Manufacturing Sector

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ABSTRACT

The manufacturing units in India are still outdated when compared to other countries. It is for the reason of deficient knowledge and lack of funds to be invested. In few companies they are demanding to put into practice latest technologies in manufacturing the products that are completely atomized. This requires humans to manoeuvre them. In recent trends they depend on high-end processing machines which complete the work in short instant. By this manner, the businesses saves time, requires huge investment on machinery, training for the employee's about the updated technology. It takes time for implementation of this process to come into existence. Innovation witnesses several advantages in the business environment. Hence, this literature attempts to find out those outcomes of innovation practices adopted in manufacturing sector. Employees were investigated to address this issue. Results indicate that innovation brings changes in overall environment, efficiency and production.

Keywords: outcomes, manufacturing sector, innovation, efficiency and production

INTRODUCTION:

The latest innovation in manufacturing industry is described as "service innovation". It is gratifying the customer necessitates before and after purchase of a product, this engrosses many junctures. Whilst service orientation is strenuous on product orientation, it leads to better customer relationships. It has an extensive disparity flanked by business strategy which spotlights on service and ascertains service development. The term focusing on service is drawing attention to customer expectation. This may probably contribute to the triumph of any business. It also gazes upon the customer satisfaction as its precedence. The formulation of service development is a procedure where pricing strategy plays a crucial role in fixing prices for the services provided accordingly. Therefore, funds are mandatory to be lifted up in order to make an endeavour to perk up or innovate organizational models and work practices for the rationale of expansion and outfitting the services. The modern inclination in manufacturing 3D printing is a process of inserting an object layer by layer which is not contained by traditional printing. It is also entitled as additive manufacturing process. This came into survival formerly when 2D got obsolete and is acknowledged as 'stereo lithography'.

REVIEW OF LITERATURE:

Zhang et al. (2019) elaborates that the manufacturer sells goods all the way through a specified platform which desires contract forms. The sharing of revenue results in lower price despite the fact that the fixed fee will induce high quality. The verdict of the study illustrates that the equilibrium will be influenced by competition, product line, cost and decision sequence.

Ghobadian et al. (2018) suggested that the lean manufacturing is capable of condensing waste but it is not coming up to scratch of eradicating the wastes. But the additive manufacturing guarantees to transfigure manufacturing by abolishing the wastes. The study investigates how the additive manufacturing momentarily diminishes or eradicates the waste and accomplishes sustainability.

Wojan et al. (2018) developed a method in order to derive added steadfast self-reported innovative measures.

The study discusses about incremental and far-ranging innovators. This investigates impact of the innovation orientation on continued existence of the manufacturing establishments. It is found that the innovators may possibly survive better than the non-innovators.

Reischauer (2018) elaborates about the gains due to the linkage between the manufacturing and politics. Reynolds and Uygun (2018) scrutinized the pathways in the direction of cultivating the innovation capacity among the Massachusetts SMEs. The four nodes that play a predominant role are OEMs, start-ups, universities and SMEs. The study recommends three areas in order to strengthen innovation ecosystem completely.

Ying et al. (2018) observed the compliance and customer value types in the environmental innovation. The study widened the links among the different forms of the inbound innovation. Dai et al. (2018) unscrambled the effects of the innovation and export on the mark-up and productivity of the firm. The study recognizes that the export would adversely affect the mark-up and productivity of the firm. But innovation impacts the mark-up and the productivity of the firm in a constructive manner.

Roos (2016) argued that design is the most imperative thing obligatory for triumphant novelty in the manufacturing industry. The global tendencies are modifying manufacturing sector other than improving its significance in the foundation for the national wealth creation. The study spotlights that design donates to both capturing and creation of value improvement in the manufacturing firms.

Beynon et al. (2016) examined the relationship between the originally executed innovation and corresponding antecedents. This study focuses on various drivers of novelty and market preparation for the modernism. The qualitative comparative analysis is performed in this study and it considers different pairs of condition variables. Furlan and Vinelli (2018) proposed that the improvement and innovation both possess same supportive organizational context. Just in time is a catalyst for performing all the innovation activities. The study established that the improvement is not directly affecting the manufacturing performance but has a mediated effect.

Oke (2013) advocated that interface of the mix and labour elasticity would certainly anticipate the product innovation in the manufacturing plants. Ueasangkomsate and Jangkot (2017) aspired to improve the innovation located in SME's of Thailand. Data was recorded from 87 responses through questionnaire method. The study concludes that the agents have a positive collaboration with the firms in terms of innovation.

West et al. (2018) stabbed to discover the service innovation in the technology driven manufacturing firms. This concentrates on smartness and characteristics of services offered by the manufacturing firms. The analysed dimensions are utilized for value co-creation, service platform and service ecosystem. The study focuses on the service scope and the capabilities for various players in this sector for executing the service operations.

OUTCOME OF INNOVATION PRACTICES IN MANUFACTURING SECTOR:

Study has grabbed data from 60 employees who work in manufacturing industry through a drafted questionnaire. Employees are from level of top, mid and bottom. This study primarily tries to throws light on outcomes related to innovations in manufacturing industry. Questionnaire has two segments; demographic details of employees and their views on outcome of innovations in the sector in Likert's five point scale. The employee's demographic details are analyzed using mean analysis. It is depicted in Table 1.

Table 1: Demographic Details

Gender	Frequency	Percent
Male	50	83.3
Female	10	16.7
Total	60	100.0
Education Qualification	Frequency	Percent
SSLC	19	31.7
HSC	22	36.7
U.G	17	28.3
P.G	2	3.3
Total	60	100.0
Age Group	Frequency	Percent
Below 25 years	25	41.6
25 - 35 years	22	36.7
Above 35 years	13	21.7
Total	60	100

Demographic profile of employees includes gender, educational qualification and age group. Table 1 shows values of frequency and its percentage level. It is obvious that 83.3 percent (50 employees) of employees are male. Majority of the employees are school dropouts and in age group of less than 35 years. Their view points about outcome of innovations are exhibited in Table 2.

Table 2: Outcome of Innovation Practices in Manufacturing Sector

Sl. No.	Outcome of Innovation Practices	Mean	Rank
1	Results in Quality of Products	4.23	9
2	Results in Operational Technology	4.27	7
3	Results in Efficiency of Information	4.38	4
4	Results in Efficiency of Communication	4.37	5
5	Results in Productivity of Employees	4.47	1
6	Results in Speed of Operation	4.37	5
7	Results in Adaptation of Situation	4.18	10
8	Results in Total No. of Products Offered	4.43	2
9	Results in Higher Level of Satisfaction of Employees	4.17	11
10	Results in New Marketing Approach	4.27	7
11	Overall Environment	4.43	2

Table 2 shows that variable “Productivity of employees” contains highest mean score of 4.47 followed by total no. of products offered (4.43), overall environment (4.43), efficiency of information (4.38), efficiency of communication (4.37), speed of operation (4.37), operational technology (4.27), new marketing approach (4.27), quality of products (4.23), adaptation of situation (4.18) and level of satisfaction of employees (4.17). Innovation practices in manufacturing sector leads to a raise in overall environment. Moreover, productivity is increasing because of innovations. The similarities among various outcomes are calculated using factor analysis.

Table 3: KMO and Total Variance

Sl. No.	KMO	Component	Total	% of variance	Cumulative %
1	0.846	Factor 1	3.159	28.715	28.715
2		Factor 2	2.588	23.530	52.246
3		Factor 3	2.203	20.024	72.270

Kaiser-Meyer-Olkin (KMO) value is 0.846. It conveys that 60 sample’s data are adequate for carrying out factor analysis. Furthermore, factor analysis formed three groups based on 11 variables. These factors explain 72 percent of variance. The details of group are displayed in Table 4.

Table 4: Rotated Component Matrix

Outcome of Innovation Practices	Factors		
	1	2	3
Overall Environment	0.904	-	-
New Marketing Approaches	0.784	-	-
Level of Satisfaction of Employees	0.777	-	-
Adaptability to Situations	0.617	-	-
Total No. of Products Offered	-	0.803	-
Efficiency of Communication	-	0.789	-
Efficiency of Information	-	0.566	-
Speed of Operations	-	0.543	-
Quality Products	-	-	0.797
Productivity of Employees	-	-	0.696
Operational Technology	-	-	0.569

Factor 1 grouped four variables such as overall environment, new marketing approaches, level of satisfaction of employees and adaptability to situations together. Factor 2 includes total no. of products offered, efficiency of communication, efficiency of information and speed of operations. Final factor includes quality products, productivity of employees and operational technology. It is observed that innovations lead to improvement in overall environment, efficiency and production process.

CONCLUSION:

The recent trends in manufacturing unit can be broadly classified into three categories namely artificial intelligence, lean manufacturing and 3D printing. Artificial intelligence uses robots which play a vital role in performing the tasks better than human but not exactly as humans. Artificial intelligence descends in the streams of computer science which builds up intelligent machines, which does the task in easy ways. Lean manufacturing is methodical way of minimization of wastage without giving up the productivity. The 3D printing is a type of printing done to facilitate the material to look alike and live one. It is tangible in nature and three dimensional object from a computer aided design. This makes the company to view the product before the process begins.

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