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## A Study of Behavioural Perspective of Operations

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### Abstract

Human factor influence the working of operating system and how the operations are being performed. The study signifies the implications of incorporating behavioural factors into various operating techniques. The decision makers and the people who are involved in implementing of various operating systems are believed to behave rationally. Their decision making is believed to be unhampered by feelings and emotions but still a difference in operational outcome like efficiency and worker productivity is there. The difference in operations outcomes was because of various behavioural factors. The study shows that operations management field can be enriched by adopting various behavioural principles from HRM and OB.

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### 1. Introduction

The term “operation research” or “operations Management” has gained importance with changing technology and increasing complexities in business world. The intense competition in the market highlighted the need of operation research. Operation research attempts to obtain optimal solutions to managerial problems mathematically. It is a problem solving and decision making technique. It identifies and defines the problem, constructs the model and chooses right solution to the given problem. It measures the effectiveness of alternatives more objectively on the basis of the goals of the organization. Operation Research helps to compare different alternatives in the light of

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goals of organization. This helps in making better decisions. Present paper is an attempt to study the importance of behavioural factors in operation research practices to improve the effectiveness and efficiency of the organization.

Initially, Operations Management and Human behaviour had been considered as two separate fields.

Various behavioural assumptions to various operations models (Boudreau et al., 2003) are:

- People do not act as a major factor
- People are deterministic and predictable in nature
- Workers are independent
- Work can be observed with precision and perfection
- Workers are like “stationary machines” with no emotions, no learning and no problem solving skills
- Workers are not part of the product or service

As per many classical operation management models individuals are generally identical to one another and show only random performance variation. They behave like machines which operate in the same way in all the situations (Hillier & Boling, 1967 & Conway et al., 1988.) However, every individual has different levels of knowledge, intelligence and possesses different set of skills and characteristics. This is the fundamental of Human Resource Management and industrial psychology insights. Therefore we can observe that these classical models were at variance with the reality.

Various theories also fail to be in line with the assumptions of operational model. Social psychology explains relational aspects among individuals and role of emotions in their actions (Loch and Wu, 2005). This theory specifies how emotions, feelings and sentiments lead to different type of actions for different set of individuals.

Various previous studies like Hawthorne experiment also specify the importance of group behaviour on performance. Work is a group activity and various social factors influence the workplace (Mayo, 1949). Some operations management models also recognize that different people possess different set of skills and allow different skills to be assigned to a different set of tasks (Hunter, et al. 1990, Bartholdi & Eisenstein, 1996, Buzacott, 2002). The operations management models based on these assumptions lead to realization of the importance of behaviour perspective in operations. Various academicians found that operations and human resources and behavioural dimensions of operations are intimately related to each other at basic fundamental level.

## **2. Behavioural Operations Management**

Behavioural operations management is the study of interaction among organizational behaviour as well as operations management. The operation Management field is an emerging field and there is a rapidly growing interest in behavioural research as pertaining to it, as behavioural research explores the relational aspects of human behaviors and operational systems & processes. Therefore understanding of human behaviour plays most crucial role in Operations Management along with its tools and techniques which are based on mathematical modelling.

Traditionally, The Operations and Supply Management is based on the assumption that the people working in operational systems and supply chains take only rational decisions, and if in their decision-making processes they fail to do so, they must be persuaded to behave rationally.

The study of human behaviour has always been a complex task. The deviations in behaviour from normal behaviour affect the outcome of various operational systems. Identification and understanding of such inconsistencies to strive for overall operational efficiencies has become key area of interests of the researchers.

The deviation from normal behaviour can be because of the human judgment and decision making or it can be because of various factors like individual differences and motivation level of the people involved in operations management process. Thus the human behaviour can determine the success or failure of various operating systems.

Behavioural operations approach focuses on the study of characteristics and attributes of human behaviour that impact the design, management, and improvement of operating systems and processes. The Social and Cognitive Psychology theories are clearly incorporated by Behavioural operations (Francesca & Gary, 2007). Behavioural operations and traditional operations management, both these concepts strive to achieve ultimate goal of overall operational efficiency by designing better mathematical models and improvising on operational systems and processes. However both these concepts differ in their basic assumption.

In the traditional operations management concept, the aspect of human behaviour and its situational deviations has always been ignored. The decision making process is carried out by an idealized decision maker who is unfailingly rational (Swamidass, 1991).

On the other hand, the study of human behaviour forms the core of behavioural operations. This concept emphasizes the role of cognitive and behavioural factors in the improving the designs, functions and management of operational systems and processes.

Human and organizational factors have a great impact on the performance of various operating processes (Fransoo, 2011). Although advanced decision support systems are being used, human decision makers are still important to improve the operational performance in various manufacturing industries. Views from a wide variety of engineering and social science disciplines experts was taken in this context.

Behavioural operations management aims at understanding the decision-making of managers and using this understanding to generate interventions that improve the operation of the supply chain (Konstantinos and Gerd, 2013). It imports knowledge from a number of fields like psychology, economics and other social and behavioural sciences. This knowledge is being used for taking various operations decisions. Some of the decisions can prove to be a liabilities for system and some of these can be assets.

The performances of various operations models are different in different contexts. This difference in performance can be explained with distinct reference to the underlying cognitive and behavioural factors affecting functioning of various operational systems. Behavioural operation is based on behavioural decision research. Because of different behaviour, individuals take different decisions in different situations.

Operations problems engage groups of people with various skills, abilities and organizational responsibilities and involve processes that are ongoing and dynamic. This means that decisions made at one point in time affect the future skills and resources available and in turn influence the future decisions.

There must be incorporation of behavioural factors into Operations Management work (Boudreau et. al., 2003). Boudreau highlighted that while appraising performance of operating systems there must be analysis of both technical and human aspects which include both operations management factors and human resource management factors. He believed that people are irrational and have different decision making abilities. They take different decisions in different contexts which leads to differences in operating performance.

An experimental study (Urda and Loch, 2007) has shown that positive or negative emotions are triggered amongst human beings in the course of social exchanges. These emotions influence the decision making of an individual while using various operational systems.

### 3. Applications of Behavioural Issues in Operations

The application of behavioural factor in operations can be understood in a better way by studying various examples like “bullwhip effect” and “Beer Distribution Game”.

It was observed that frequency of communication falls off steeply with the increasing physical distance between two colleagues (Tom Allen, 1977). Over a distance of forty meters communication amongst colleagues shrinks by a factor of five. This pattern is quite stable for different business situations. This model is independent of whether people are working in same organization, or in the same department or even on the same assignment. This fall in communication can lead to difference in operating systems functioning which in turn can also result in change in efficiency and performance.

#### 3.1. Beer distribution game

The beer distribution game (Croson & Donohue, 2002) was created by a group of professors at MIT Sloan School of Management in early 1960s. It is a simulation game which demonstrates key principles of supply chain management. The objective of this game is to incur minimum expenditure on back orders and inventory while maintaining customer demand for cases of beer through the distribution side of the supply chain. In this game four stages are involved, the manufacturer, the distributor, the supplier and the retailer. There is two week communication gap of orders toward the upstream in supply chain and a two week supply chain delay of product towards the downstream. The cost for holding excess inventory is one point and cost for any backlog (old backlog + orders - current inventory) is also one point. Total cost incurred is calculated and the aim is to incur minimum expenditure and fulfilling maximum customer demands.

The results in this case will depend on different viewpoints of different individuals to handle a particular situation. Different individuals maintain different level of inventory based on their decision making skills.

#### 3.2. Bullwhip effect

The “bullwhip effect” in supply chains (Lee, Padmanabhan & Whang, 1997) is a phenomenon in forecast-driven distribution channels. It specifies that in response to changes in customer demand there is a trend of larger and larger swings in inventory. Customer demand is not perfectly stable. So there is a need for businesses to forecast the demand so as to maintain inventory and other resources as per the needs of customers. But demand forecasts cannot be predicted accurately. These forecasts may vary from individual to individual because of different behavioural factors associated with each individual. Each individual may estimate a different forecast of customer demands. The customers’ decisions of ordering product influences the demand of a product. If we move up in the chain from the consumer toward the manufacturer, the demand becomes more and more erratic and swings in larger and larger cycles. This is called bullwhip effect. One of the major cause of bullwhip effect is the behavioural factor. These behavioural factors may be the inability to coordinate with others and cognitive limitations (Forrester, 1958, 1961; Sterman, 1989a, 1989b; Watson & Zheng, 2005). The effect persists even if demand is constant and all other operational factors are removed. This shows that various behavioural factors are leading to this effect.

### 4. Conclusion

The study signifies that human factor is critical to the operation of any operating system. A lot of behavioural factors play an important role in various operations management theories. Earlier operations management focused mainly on manufacturing environments and covered issues pertaining to Research and development, supply chain management and retailing services and its designing involved the details of various strategies like determining the location and size of plant, transportation problems, specifying product development process and choosing the best

alternative among the available solutions. Decision to choose the best solution is supposed to be taken within the constraints specified by the operating system and its design. Exclusive dependence and reliance on operating models and theories led to various errors. While facing different situations, people behave in a different way and took different decisions. This type of behaviour which is not in line with available theories led to error.

A lot of cases were found where same set of operations gave different results or different performance. This change in performance was attributed to behavioural factors of individuals involved in operations functions. Different decision makers and problem solvers show different emotions and feelings and use different set of experiences for taking actions in different contexts.

To achieve maximum performance from various operating systems businesses should focus on social and behavioural perspective of various employees. The integration of behavioural factors with operating principles can lead to success of the organizations.

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