Elton Mayo’s Hawthorne Experiment and Its Contributions to Management

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Introduction

- The term “Hawthorne” is a term used within several behavioral management theories and is originally derived from the western electric company’s large factory complex named Hawthorne works.
- Starting in 1905 and operating until 1983, Hawthorne works had 45,000 employees and it produced a wide variety of consumer products, including telephone equipment, refrigerators and electric fans.
- As a result, Hawthorne works is well-known for its enormous output of telephone equipment and most importantly for its industrial experiments and studies carried out.
Hawthorne Experiment by Elton Mayo

- **Elton Mayo.** Elton Mayo (1880 – 1949) was an Australian psychologist, an industrial researcher and an academic organizational management scientist. His conducted studies, together with the Hawthorne studies, became the base for his lifelong breaking theories on Human Relations and scientific management.

- In 1927, a group of researchers led by Elton Mayo and Fritz Roethlisberger of the Harvard Business School were invited to join in the studies at the Hawthorne Works of Western Electric Company, Chicago.
Elton Mayo (left) with Fritz J Roethlisberger
Hawthorne Experiment by Elton Mayo

- The Hawthorne Experiment brought out that the productivity of the employees is not the function of only physical conditions of work and money wages paid to them. *Productivity of employees* depends heavily upon the satisfaction of the employees in their work situation.
- Mayo’s idea was that logical factors were far less important than emotional factors in determining productivity efficiency.
- Mayo concluded that work arrangements in addition to meeting the objective requirements of production must at the same time satisfy the employee’s subjective requirement of social satisfaction at his work place.
Hawthorne experiment

The Hawthorne experiment consists of four parts. These parts are briefly described below:

- Illumination Experiment.
- Relay Assembly Test Room Experiment.
- Mass Interviewing Programme.
- Bank Wiring Test Room Experiment.
1. Illumination Experiment:

- In the early 1920s Chicago’s Western Electric Hawthorne Works employed 12,000 workers.
- The plant was a primary manufacturer of telephones, and in 1924 the company provided a site to cooperate with the NRC on a series of test room studies to determine the relationship between illumination and worker efficiency.
- The basic idea was to vary and record levels of illumination in a test room with the expectation that as lighting was increased, productivity would too.
- In another test room, illumination was decreased, with the correlating expectation that efficiency would decrease.
This experiment was conducted to establish relationship between output and illumination.

When the intensity of light was increased, the output also increased.

The output showed an upward trend even when the illumination was gradually brought down to the normal level.

Therefore, it was concluded that there is no consistent relationship between output of workers and illumination in the factory. There must be some other factor which affected productivity.
2. Relay Assembly Test Room Experiment
In order to observe the impact of these other factors, a second set of tests was begun before the completion of the illumination studies on April 25, 1987.

The relay-assembly tests were designed to evaluate the effect rest periods and hours of work would have on efficiency.

Researchers hoped to answer a series of questions concerning why output declined in the afternoon: Did the operators tire out? Did they need brief rest periods? What was the impact of changes in equipment? What were the effects of a shorter work day? What role did worker attitudes play?
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- Six women operators volunteered for the study and two more joined the test group in January 1928.
- They were administered physical examinations before the studies began and then every six weeks in order to evaluate the effects of changes in working conditions on their health.
- The women were isolated in a separate room to assure accuracy in measuring output and quality, as temperature, humidity, and other factors were adjusted.
- The Hawthorne researchers attempted to gain the women’s confidence and to build a sense of pride in their participation.
A male observer was introduced into the test room to keep accurate records, maintain cordial working conditions, and provide some degree of supervision.

The women were employed in assembling relays or electromagnetic switches used in switching telephone calls automatically.

The women assembled the more than 35 parts of the relay by hand. The relays were then carefully inspected. The entire process was highly labor intensive and the speed of assembly had an obvious effect on productivity.
Productivity and morale increased considerably during the period of the experiment.

Productivity went on increasing and stabilized at a high level even when all the improvements were taken away and the pre-test conditions were reintroduced.

The researchers concluded that socio-psychological factors such as feeling of being important, recognition, attention, participation, cohesive work-group, and non-directive supervision held the key for higher productivity.
Work Conditions and Productivity

Results

- Under normal conditions with a forty-eight hour week, including Saturdays, and no rest pauses. The girls produced 2,400 relays a week each.
- They were then put on piecework for eight weeks. – Output increased
- They were given two five-minute breaks, one in the morning, and one in the afternoon, for a period of five weeks. – Output increased, yet again
- The breaks were each lengthened to ten minutes. – Output rose sharply
- Six five-minute breaks were introduced. The girls complained that their work rhythm was broken by the frequent pauses – Output fell only slightly
- The original two breaks were reinstated, this time, with a complimentary hot meal provided during the morning break. – Output increased further still
- The workday was shortened to end at 4.30 p.m. instead of 5.00 p.m. – Output increased
- The workday was shortened to end at 4.00 p.m. – Output leveled off
- Finally, all the improvements were taken away, and the original conditions before the experiment were reinstated. They were monitored in this state for 12 more weeks. – Output was the highest ever recorded – averaging 3000 relays a week
3. Mass Interview Programme:

- The objective of this programme was to make a systematic study of the employees attitudes which would reveal the meaning which their “working situation” has for them.
- The researchers interviewed a large number of workers with regard to their opinions on work, working conditions and supervision.
- Initially, a direct approach was used whereby interviews asked questions considered important by managers and researchers.
- The researchers observed that the replies of the workmen were guarded. Therefore, this approach was replaced by an indirect technique, where the interviewer simply listened to what the workmen had to say.
- The findings confirmed the importance of social factors at work in the total work environment.
4. Bank Wiring Test Room Experiment:

- This experiment was conducted by Roethlisberger and Dickson with a view to develop a new method of observation and obtaining more exact information about social groups within a company and also finding out the causes which restrict output.

- The experiment was conducted to study a group of workers under conditions which were as close as possible to normal. This group comprised of 14 workers. After the experiment, the production records of this group were compared with their earlier production records.
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- Their job was to wire conductor banks, a repetitive and monotonous task. The banks were one of the major components of automatic telephone exchange.
- Between 3,000 and 6,000 terminals had to be wired for a set of banks. The work was tiring and required the workers to stand for long periods of time.
- Pay incentives and productivity measures were removed, but a researcher was placed into the test room as an observer and the workers were interviewed.
- The purpose of the bank-wiring tests was to observe and study social relationships and social structures within a group.
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- Perhaps the most revealing aspect of the bank-wiring tests was that the workers combined to slow down production.
- It was observed that the group evolved its own production norms for each individual worker, which was made lower than those set by the management.
- Because of this, workers would produce only that much, thereby defeating the incentive system.
- Those workers who tried to produce more than the group norms were isolated, harassed or punished by the group.
The findings of the study are:

- Each individual was restricting output.
- The group had its own “unofficial” standards of performance.
- Individual output remained fairly constant over a period of time.
- Informal groups play an important role in the working of an organization.
Findings....

- The researchers found that although the workers were paid according to individual productivity, productivity decreased because the men were afraid that the company would lower the base rate.
- There was no trust between employees and researches, so they simply held down production to the level they thought was in their best interest.
Findings of Hawthorne Experiments

- Social Factors
- Group Influence
- Production level
- Motivation
- Conflicts
- Leadership
- Cordial Relationship
- Behavior of workers
- Supervision
- Communication
Criticism of Hawthorne Experiments

- De-recognition
- Pro Management Bias
- No Scientific enquiry
- Clinical Bias
- Lack of Universal Application
- Overlooking social factors
- Limited scope of research
- Treatment of workers
- Undue importance to observation & worker satisfaction
- Doubtful validity
- Highlighting only known facts