

## Chapter 2

# The Three Conditions for Behavior, and the Five Behavior Management Measures

### 2.1 The Three Necessary Conditions for Behavior

The three necessary conditions for the occurrence of a given behavior are behavioral utility (positive utility, since we are assuming that the actor is rational), behavioral resource, and behavioral opportunity. All three conditions are necessary for the occurrence of the behavior in question. Unlike in classic economics which is merely concerned with behavioral utility, a key principle in this volume is that for a given behavior to happen all three conditions must exist.

We can express the relationship between the three necessary functions as:  $e = f(u \wedge res \wedge opp)$ . Here,  $e$  stands for the behavior effort level,  $f(\cdot)$  the incremental function,  $u$  the positive utility of said behavior,  $res$  the behavioral resources, and  $opp$  behavioral opportunity.  $\wedge$  is the logical operator, indicating that the elements to its left and right must exist or that one should take the smallest value of the elements to its left and right.

#### 2.1.1 Behavioral Utility

Roughly speaking, the term “behavioral utility” refers to the “benefits” arising following the action and which meet the needs of the individual. Of course, if certain behaviors bring “drawbacks” to the individual, the behavioral utility here would be “negative”.

Without doubt, when an individual has to choose a certain action among several options, behavioral utility becomes a critical factor in consideration. Man hunts for food when he is hungry, and seeks additional layers of clothing when he is feeling cold. Both these instances are examples of how behavioral utility would affect one’s priorities.

In this volume, we assume that the actor is risk-neutral, and this behavioral utility can be directly expressed as benefits (such as economic benefits). Under such circumstances, behavioral utility  $u$  can be regarded as the difference between two factors: behavioral reward  $r$  and behavioral cost  $c$ , i.e.,  $u = r - c$ .

Most, if not all, studies in the areas of management science and economics on the subject are solely concerned with utility as a cause of behavior. For instance, Abraham Maslow has proposed the theory of the Hierarchy of Needs, which states that only unsatisfied needs can affect the behaviors of the individual. For the theory, he proposed five “steps” or levels of needs: biological needs, security needs, social or emotional needs, the need for respect, and the need for self-actualization. Frederick Herzberg’s Motivation-Hygiene Theory states that there are two key factors that affect human behavior: hygiene and motivation. In this theory, the hygiene factor can eliminate “dissatisfaction” in individuals while the motivation factor can bring “satisfaction” to individuals. The Expectancy Theory of Victor Vroom states that only when the individual anticipates an attractive outcome to a certain behavior would he opt for such behavior. In his Reinforcement Theory, B.F. Skinner states that human behavior is a function of stimulation. If the stimulation brought on by a certain action is favorable, then this action will surface repeatedly. On the other hand, if the stimulation is unfavorable, the tendency for this behavior to occur again would be diminished.

As for the latest developments in the field of behavior management, Leonid Hurwicz et al., have proposed theories of mechanism design including the principle of incentive compatibility, which is also based on behavioral utility.

In management practice, the idea of behavioral utility has also received much attention. For instance, in studies of the subject of remuneration as well as in remuneration plan designs, behavioral utility is regarded as the way to promote hard work by the employee (i.e., to encourage the worker to select the behavior “working hard”).

From the above, we can see that in traditional studies of behavior management, behavioral utility has been only regarded as the variable capable of influencing behavioral outcome.

However, to look at the factors that affect human behavior holistically, apart from the traditional “behavioral utility” (which has been studied the most) we must also look at the factors of behavioral resources and behavioral opportunity.

### ***2.1.2 Behavioral Resources***

The term “behavioral resources” refers to consumables used up during the behavioral process. For instance, all actions require time to complete. Therefore, time is a resource required for the occurrence of behavior. This is also a key reason why humans cannot engage in too many activities at the same time. To take another example, in research behavior, apart from time, funds are also needed for the

purchase of equipment and materials. Therefore, funds are a commonly used form of behavioral resources. In a modern society of commodities, funds have a certain degree of versatility as many behavioral resources can be exchanged by using funds.

### **2.1.3 Behavioral Opportunity**

Apart from behavioral utility and behavioral resources, behavioral opportunity is another factor that has an impact on the probability that a given behavior would occur. If the actor has objectively opted for a certain behavior or action, and the resources required for the action are adequate, then objectively speaking the probability that the given behavior would occur would be the chance of behavior.

For instance, for a policeman wishing to prove himself by catching burglars, if in his work environment he only comes across individuals who display desirable behavior, then his chances of meeting, and catching burglars would be diminished.

To take another example, during the Cultural Revolution period in China, as the *gaokao* examination institution had been canceled, youth of the right age group at that time had zero possibility of “gaining admission to university”.

## **2.2 The Five Measures of Behavior Management**

We can hence see that three conditions are necessary for the actor to undertake any behavior or action. They are: behavioral resources, positive behavioral utility, and behavioral opportunity. Here, behavioral utility comprises behavioral rewards and behavioral costs.

Hence, institution designers can choose from five types of measures when trying to create institutions that impact on individual behaviors: measures that control behavioral resources, measures that control the scale of behavioral rewards, measures that control the extent of behavioral costs, measures that control the availability of behavioral opportunity, and measures that change observation intensity or sensitivity. Of these five types of measures, the first four types are targeted at the three conditions that make behaviors possible (of which the utility condition can be further divided into reward and cost conditions), while the last measure is a generic measure that can be used in tandem with any of the other four measures.

We need to note that although these measures are management measures in nature, they are often affected by technological and material conditions. For example, reward measures require managers to have access to a certain amount of monetary and material resources, while behavioral cost measures tend to be associated with technological means.

## **2.2.1 Reward Measures**

### **2.2.1.1 The Concept of the Reward Measures**

Behavioral reward measures are a type of management measure that works by making changes to behavioral rewards so as to influence the actor's proclivity towards a certain behavior. Therefore, with desirable behavior the manager would provide positive rewards while for undesirable behavior, the manager would try to provide negative rewards for the actor.

Behavioral rewards can further be classified as naturally-occurring rewards and rewards granted by the manager. Examples of the former include operating profits and social standing, while examples of the latter include wages, bonuses and fines, job promotions and demotions, etc. The rewards granted by the manager are also known as "managerial rewards".

Since ancient times, the reward measure has been the most commonly used measure in behavior management.

Example 2.1 "High pay to ensure incorruptibility of public servants"

In some countries, to tackle the problem of corruption among public servants, the institution of "high pay" has been adopted with significant pay increases for such workers. This method is an effective reward measure that increases the negative reward associated with corruption. If the official's corrupt behavior were to be detected, not only would he receive administrative punishment he would also lose his high pay. This way, the negative reward from corrupt behavior would be exacerbated, making the option less attractive for officials.

### **2.2.1.2 Reward Types**

Generally speaking, the number of reward measure types equals the number of reward types available. Key reward types are as follows:

- (i) Economic-type rewards such as cash rewards, fines, and wage. This type of reward can satisfy individuals' need to improve the quality of their lives. Reward measures targeting this type of rewards are used most commonly.
- (ii) Reputational rewards such as commendations, criticism, and job promotions and demotions. This type of reward can satisfy individuals' need for social standing and good reputation.
- (iii) Attitudinal and emotional rewards that satisfy individual's needs in terms of their beliefs and attitudes, as well as their emotional well-being.

Attitudinal rewards arise with the pursuit of justice or certain moral values by individuals. Such behaviors include helping the disadvantaged and the punishing of villains. The characteristic of this class of rewards is that "rewards" are felt after the occurrence of certain situations by others (and sometimes also the actor himself).

For example, an individual might feel gratified upon hearing that a villain has been punished. This can be seen as a positive reward brought by the legal institution to the public. When witnessing a disadvantaged person struggling to make ends meet with no help in sight, individuals often feel disturbed. This can be seen as a negative reward caused to the public by the relevant institutions that have not been well-designed or implemented.

To take another example, in a hostage situation, the government or the public may sacrifice their respective interests to stage a rescue, sometimes by offering the hostage-taker certain material benefits in exchange for a release. Such behavior is also the result of attitudinal rewards.

Emotional rewards arise from the strong sense of responsibility and attachment that individuals feel vis-à-vis persons they have a close relationship with. For instance, it is precisely out of a sense of responsibility and attachment that individuals try to obtain as much benefits as possible for their children, subordinates, friends, nation, etc. When individuals see that persons they are closely related to have obtained a certain benefit, they would also feel a positive reward. Conversely, when individuals see that persons they are closely related to have lost certain benefits, they would feel a negative reward. This type of reward also has the feature of making the individual feel the “reward” when there is a change to the circumstances of others.

Similarly, although one often incurs a certain loss due to retaliatory actions taken against one’s enemies or competitors, as long as the opposite has taken a beating, the individual would also feel gratified. This is the result of the emotional rewards.

### **2.2.2 *Resource Measures***

Resource measures are a type of management measure that works by making changes to resources needed by the actor for committing a certain behavior, so as to have an impact on the probability of behavior occurrence. Therefore, with desirable behavior, the manager would provide more of such resources while for undesirable behavior, the manager would as much as possible try to withhold such resources.

Example 2.2 Provision of research resources by the National Natural Science Foundation of China in order to promote desirable behavior

To promote the desirable behavior that is basic science research, each year the National Natural Science Foundation would provide support to selected research projects. This is effectively a way of providing certain resources to promote basic science research as part of its efforts to enhance the quality of basic science research in China.

Example 2.3 Tackling campus drinking by loading bursary grants directly onto meal cards

A certain college has discovered that some of its students have been drinking on campus, with undesirable consequences such as the frittering away of money on

alcohol, the occurrence of incidents, and negative impact on students' academic performance. Hence, the college has expressly forbidden the drinking of alcohol by students in its rules. However, soon enough the school realized that this rule was not very well enforced. Certain students would buy alcohol as soon as their bursary grants were disbursed, and borrowed from their teachers and fellow students when money ran out. Later on, the school decided to load bursary grants directly onto student meal cards, with these cards only usable in campus cafeterias. Students were also not permitted to cash out any value remaining on these meal cards. As a result, the phenomenon of campus drinking diminished significantly.

In this example, the measure to tackle the problem of campus drinking is effectively a resource measure that has taken away a key resource for such behavior to happen, i.e., cash. As monetary value stored within meal cards could not be used in shops outside of campus cafeterias (which did not sell alcohol), students could no longer purchase alcohol using their bursary grants. This led to students "having the money to eat, but not to buy alcohol", and the problem of "campus drinking" was effectively dealt with.

When using resource-type measures, institution designers must pay attention to the precision of the measure. That is to say, the designer must make sure that resources provided would be used on desirable behavior and not for other purposes.

### ***2.2.3 Behavioral Cost Measures***

Behavioral cost measures are a type of management measure that works by making changes to behavioral costs so as to have an impact on the probability of behavior occurrence. Therefore, with a desirable behavior, the manager would try to lower the costs of the behavior while with an undesirable behavior, the manager would try to raise the costs of such behavior. In the case of customs taxes levied on imported goods, the aim is to increase the costs of purchasing imported goods in order to protect the domestic industry.

### ***2.2.4 Opportunity Measures***

Opportunity measures are a type of management measure that works by making changes to behavioral opportunity, so as to have an impact on the probability of behavior occurrence. Therefore, with a desirable behavior, the manager would try to provide more opportunities while with an undesirable behavior, the manager would try to eliminate opportunities for such behavior.

The commonly used term "opportunity cost" actually covers two types of situations: first, it refers to the loss caused by the loss of opportunity, such as in the case where one has possibly lost out on a job promotion because he or she had chosen to go back to school. Second, the term can also refer to the impossibility of

re-opting for the behavior due to resource limitations. For example, a stock investor may not have been able to purchase gold at one point due to insufficient funds. This would later cause the investor to miss out on subsequent gains in gold price hike.

Of the aforementioned two situations, the result of the first situation is similar to the result of an opportunity measure, while in the second situation behavior was restricted by a lack of resources, which in essence is similar to the effect of a resource measure.

Opportunity measures are also often used in management practice. For instance, the mandating of community activities for students can cut down the time students otherwise spend at Internet cafes since the opportunity to “hang out at the Internet cafe” has been diminished.

#### Example 2.4 Tackling the problem of fare cheats

In a certain city, it was found that many bus passengers tended to underpay for their bus fares, thereby causing the loss of operating income for the bus institution. Passengers were able to do that as during ticket purchase at boarding, they would be given different options to choose from at the automated ticket machine in terms of “fare tier”. This provided the opportunity for passengers to select fare options that did not commensurate with the actual length of their journeys. Later on, the bus institution adopted a new fare structure of “flat fee of 2 Yuan” no matter the distance the passenger would travel. This eliminated the opportunity for passengers to opt for cheaper fares and hence completely eradicated the undesirable behavior of “cheating on bus fare”.

### 2.2.5 *Observational Measures*

Observational measures work by enhancing observation intensity or sensitivity vis-à-vis the target behavior in order to increase the probability that said behavior would be affected by the management institution. Such measures are used to encourage actors to opt for desirable behavior and to abandon undesirable behavior.

The observational measure is different from other measures in the sense that it is typically used in tandem with other measures rather than being used singly. In addition, a second difference is: the observational measure has an even closer relationship to equipment.

#### Example 2.5 Computer technology in aid of observational measures: the example of coal tolls

For many years, Shanxi’s highway coal management agencies had been plagued by the problem of bribes made to personnel to facilitate the passage of coal trucks carrying coal for which the requisite tolls have not been paid. This was a problem that caused massive monetary loss. In 1998, this problem was finally resolved with the implementation of a computerized management institution.

This institution comprises of two sub-institutions: an electronic monitoring institution and an electronic currency institution. All vehicles seeking passage are recorded electronically with the weight of the vehicle also recorded and displayed. Coal stations along the highway no longer dealt in cash collection, with payment made using stored-value magnetic cards instead. This effectively eliminated any exchange of cash between station personnel and truck drivers.

The implementation of this institution led to the elimination of various forms of corruption. At the Yangguang Coal Station in Shanxi Province alone, income increased by RMB9.11 million in a single month (Duan 1998).

Commentary:

This is the effect of an enhancement of the observational measure using more advanced equipment, and as a result the undesirable behavior of “coal station personnel being bribed by truck drivers” has been effectively tackled. The problem of corrupt staff allowing the passage of trucks carrying coal without paying tolls was rampant as high-performance observational measures had not been found then. The use of the computerized monitoring institution and magnetic card payment institution has made monitoring of such an undesirable behavior highly sensitive, which means that the relevant personnel can no longer benefit from the abuse of their positions.

This example shows that when seeking effective observational measures, we must not neglect the importance of equipment. Therefore, we should pay attention to the development and use of technological aids.

Example 2.6 The inscription of maker name on bricks: a Ming Dynasty solution against “tofu-dreg” construction (Gao 2011).

In 1372, the fifth year of Hongwu Period of the Ming Dynasty, the head of the Changsha Defense Command Qiu Guang ordered that bricks used to repair the city wall be inscribed with the name of the brick maker and the year of manufacture. This way, if quality issues were later found at the kiln production, it would be easy to track down the person responsible.

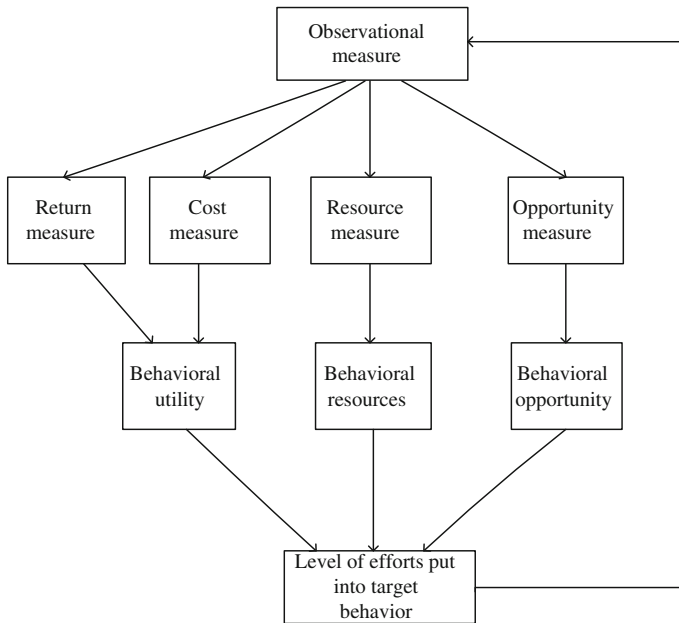
Commentary:

This method of inscribing the name of the maker and the year of manufacture onto the brick is a way of realizing an observation measure through the implementation of certain rules on behaviors. This practice has survived into the present day.

### ***2.2.6 The Relationship Diagram of the Three Conditions for Behavior and the Five Behavior Management Measures***

We can show the overall relationship between the three conditions necessary for behavior and the five types of management measures using Fig. 2.1.





**Fig. 2.1** The relationship diagram of the three conditions for behavior and the five behavior management measures

From Fig. 2.1 we can see that the observational measure provides the ground for the operation of other measures. Reward and cost measures can change behavioral utility, while resource measure can have an impact on the scale or availability of behavioral resources. Finally, opportunity measure has an impact on the availability of behavioral opportunity to the individual. The three conditions of behavioral utility, behavioral resources, and behavioral opportunity together determine the chances that a given behavior would occur, as well as the level of efforts put into said behavior by the individual.

## 2.3 Issues to Consider and Resolve When Using Reward Measures

Compared to the other four measures, the reward measure has been used most commonly in management practice and it also presents in the most number of ways. However, there are also many problems associated with its use. Therefore, in this section we look at the issues to consider and resolve when using reward measures.

### 2.3.1 *The Numerical and Precedence Expectancy of the Reward*

As behavioral rewards occur following the completion of the action (i.e., behavior), it means that the actor is effectively making behavioral choices based on his expectations of the rewards a given behavior would bring. Reward measures also work by changing the actor's expectations of rewards from a given behavior, thereby influencing his choice of behaviors.

Therefore, before deploying a certain reward measure, we would need to first to determine the “degree of impact” on the actor by the reward imposed in a precise manner. As such, we would need to understand how actors determine the scale of the reward.

Actors mostly judge the expected reward of a given behavior in one of two ways: numerical expectancy and precedence expectancy.

#### 2.3.1.1 The Numerical Expectancy of the Reward

The numerical expectancy of the reward is a value derived by first multiplying each of the various possible outcomes of a given behavior (often, a single action can result in an array of possible outcomes) with the probability of such an outcome occurring and then adding these sums together. When specific data is available (including the set of possible behavior outcomes, the reward value of each outcome, and the probability of each outcome occurring) we can then calculate the expected reward using the numerical expectancy method. For the behavior of “buying of lottery tickets”, the probability of winning the top prize and the value of the prize are known. Therefore, we can easily calculate the value of the expectancy reward for such behavior.

We assume that  $\bar{r}_i = \{r_{i1}, r_{i2}, \dots, r_{in}\}$  is the set of reward values in one-to-one correspondence with outcomes of behavior  $i$ , and it is a mutually exclusive outcome set. A mutually exclusive outcome set is a set where one and only outcome would occur.

$p_i$  is the correspondent probability set (there is bijection between set  $\bar{r}_i$  and set  $p_i$ ),  $p_i = \{p_{i1}, p_{i2}, \dots, p_{in}\}$ ,  $\sum_{j=1}^n p_{ij} = 1$ , then the numerical expectancy of the reward would be:

$$r_i = \sum_{j=1}^n p_{ij} r_{ij} \quad (2.1)$$

#### 2.3.1.2 The Precedence Expectancy of the Reward

However, in management practice, more often than not one is unable to know the specific outcome probabilities and corresponding reward values for a certain

behavior. Under such circumstances, where the value of numerical expectancy cannot be calculated, the individual can only look towards previous instances of rewards on similar behavior by others as a way of estimating rewards. This is what we call “precedence expectancy” in this volume.

For example, with the behavior “attending graduate school”, individuals cannot possibly predict with precision the employment and remuneration outcome for life after graduate school. However, they can look at individuals who have completed their graduate studies and are now in the workforce to estimate how they might fare if they were to take the graduate school route. This is what we call “precedence expectancy” in this volume.

In reality, it is more common to see individuals make use of precedence expectancy to estimate the reward on a given behavior. When selecting commodity types for trade or when selecting majors in college, it can be difficult for the actor to forecast behavioral rewards using precise data. However, they can determine the rewards from various possible choices using the precedence expectancy method.

### ***2.3.2 Issues to Note When Using Reward Measures***

#### **2.3.2.1 Rewards and Penalties Should Be Well Grounded and Pre-established**

From the perspective of acceptability and recognition, institution rules should be pre-established and made clear from the onset together with the corresponding rewards and penalties. This way, the institution is more likely to be accepted by individuals (both within the institution and outside the institution). Arbitrarily granted and meted-out rewards and penalties will only incur the displeasure of individuals and would not be very well accepted. Therefore, decisions for the granting and meting out of rewards and penalties must be grounded on a strong basis with the relevant rules created and made clear to everyone in the target group beforehand.

#### **2.3.2.2 Measure Accuracy, with the Use of a High-Performance Observer**

When we use reward measures, there is the question of when a reward should be given, when a penalty should be meted out, and how generous or severe should such measures be. This is an issue of accuracy for the reward measure.

To enhance the accuracy of the reward measure, when performing institution design, the designer must ensure that a high-performance observer is included in tandem with the reward measure (i.e., the reward-type promoter). For example, reward and penalty standards should be made clear and target behaviors should be easily observable with accuracy.

### 2.3.2.3 The Prevention of Reward Compensation

The term “reward compensation” refers to a situation where the manager can only control part of the reward to the actor for a given behavior. This way, the manager’s control over actor behavior would be greatly diminished.

For example, in families where only the husband is working, the husband would work extra hard as he is the sole breadwinner. With families where both the husband and wife are working, especially when the wife draws a very high wage, reward measures such as rewards and penalties would not work as well on the husband in the workplace as rewards from work would not matter to him as much as if he were the sole breadwinner.

### 2.3.2.4 Improving the Detection of Positive Guiding Rewards: The More Direct the Reward Chain, the Better

The term “positive guiding reward” refers to a reward that guides the actor into selecting the target (desirable) behavior. Within an institution environment, the term refers to the reward for specific behaviors as mandated by institution rules.

The term “reward chain” refers to the various segments or stages that occur between the occurrence of behavior and the obtaining of behavioral rewards by the actor. If there are many intermediate or intervening segments [between behavior and reward], then the reward chain is considered long. An example of a reward chain in the case of an employee receiving a cash bonus for his hard work would be: Hard work → Work performance → Recognition by superiors → Cash bonus received.

The longer the reward chain, the higher the uncertainty of obtaining the expected reward following an action (behavior). For example, the uncertainty may hinge on whether the behavior in question was observed, or whether the bonus measure would be implemented properly, etc. The more the number of intervening segments, the lower the probability of obtaining expected rewards following an action (probability is multiplied across segments, with probability generally lower than 1 and decreasing with each intervening stage). On the other hand, the shorter the reward chain, the more likely that the actor would receive the expected rewards. The more observable the reward on the part of the actor, the stronger the guiding effect of said rewards. Conversely, the less observable the reward on the part of the actor, the weaker the guiding effect of said rewards.

For example, in the case of the use of banned food additives by food manufacturing enterprises, the relevant state agencies have put in place corresponding negative rewards for such actions. However, the reward chain in this case is long: first, the addition of such substances to food products must be observed. This typically happens with scheduled sampling and tip-offs from the public, which means that the contravention of this rule may or may not be discovered in the first place. Even if such behavior has been discovered, an enforcement team is needed to mete out the corresponding penalty to the offending manufacturer. There is no

guarantee that the enforcement team would take its work seriously in this regard. We see that with a long reward chain such as this, it is no longer a surprise as to why the behavior of using banned additives in food products by manufacturers continues to be a rampant problem.

On the other hand, when individuals make their own food at home, they do not need any observation or penalties in place, and yet people generally do not add banned substances to their food. That is because if they do so, undoubtedly they would end up harming themselves. This is a very direct kind of reward with no intermediate links or stages.

Similarly, objectively speaking if a negative guiding reward chain (i.e., a reward chain that causes undesirable behavior) cannot be completely cut off, then we can try to lengthen the reward chain in order to weaken its effects.

### ***2.3.3 Reward Interference and Promotion in the Institution***

#### **2.3.3.1 The Three Behavioral Tendencies of the Actor**

The basis for the selection of any behavior by the actor is the maximization of behavioral utility. Therefore, the actor has three behavioral tendencies: “pro-self”, “pro-others”, and “oppositional”. Among these, “pro-self” refers to a tendency for behavior that benefits the actor himself, with economic rewards and social-standing rewards typically providing the motivation for such a tendency. “Pro-others” behavior, which benefits a specific target (individual or group) other than the actor himself, arises from attitudinal and emotional rewards in many cases. The “oppositional” behavioral tendency of the actor refers to the tendency to behave in a way that is unfavorable to a target. Attitudinal and emotional rewards are also often a cause of this tendency.

From the perspective of institution effects, behavioral rewards may lead to two different effects: institution interference and institution promotion.

#### **2.3.3.2 Reward Interference in the Institution**

Behavioral rewards can cause interference within the institution, if institution implementers choose poorly (such as when certain rewards cause the implementer to opt for a behavior unfavorable to the institution) and the observation of institution implementers is poor or when there are inadequate limits on the behavior of institution implementers (such as reward-type, resource-type or opportunity-type limits).

There are many instances where reward measures have led institution implementers to adopt undesirable behavior. For example, in institutions where individuals that are part of the target group have been allowed to become implementers of benefit distribution institutions—such as the lottery—then the “pro-self”

tendency when realized as the behavior can create a “positive reward” for the implementer. Under such circumstances, institution implementers would find it hard to “distribute fairly”, leading to implementation bias within the institution.

To take another example, if the institution implementer has had a conflict with an individual under management (which typically leads to the individual being punished overly harshly or receiving less rewards) or when there is a family relationship between the implementer and an individual under management (which typically would lead to the individual getting off with light punishments and receiving comparatively more rewards), etc., then as all three behavioral tendencies on the part of the aforementioned actors exist, it may lead to implementer behavioral bias instead. In such situations, the “related-parties” policy is a method commonly used to prevent such interference.

In addition, “rent-seeking behavior” on the part of those with power, i.e., institution implementing behavior by institution implementers that “serves the self” for positive rewards turns authority that is meant for “the impartial discharge of one’s duties” into a tool for self-enrichment.

#### Example 2.7 The manipulation of numbers by officials

Numbers maketh the official, and the official maketh the numbers. The phenomenon of falsifying numbers and of over-stating performance is a classic one in officialdom. This problem has remained widespread because although everyone knows that such behavior is “undesirable behavior”, it is not in the interest of superiors to actually deal with such problems honestly, as this would in turn lead to the “deterioration” of the superior’s score sheet since the performance of the superior is partly a composite of his subordinates’ performances. This is effectively a behavior that presents reward interference for the superior’s “punishment for subordinates’ misdeeds” (though managing these subordinates was indeed the job of the superior). Hence, many superiors are not too proactive when it comes to tackling such behavior by their subordinates. This type of reward interference is one of the main reasons why we see the practice of the falsification of performance data permeate certain agencies at various levels.

#### Example 2.8 The “Fair Scale”

For the protection of consumer interests, a “Fair Scale” was set up at several marketplaces in a particular city. The scale, which typically was managed by a dedicated staff member, was put in place for customers who wanted to verify that they had received the amount of goods they had paid for.

However, during an inspection by the city, it was found that not only did many administrators of the “Fair Scale” fail to protect the interests of consumers, some of them had even conspired with marketplace vendors to cheat the consumer. In one instance, a consumer had gotten into an argument with a rice vendor who had shortchanged her. At this point, the “Fair Scale” administrator came along, and told the customer: “It is not like you are buying gold. Why are you being so niggardly?”

That the “Fair Scale” administrator would gang up with businesses to short-change the customer was something the relevant agencies had not foreseen.

**Commentary:**

This problem arose due to the selection of undesirable behavior the institution implementer caused by reward interference. When consumers complain of being shortchanged, the administrator of the “Fair Scale” can make one of two behavioral choices: to protect the interests of the consumer or to side with the vendor.

The rewards on these two types of behavior are different. As consumers are but transient passers-by at the marketplace, the administrator would not gain very much by protecting the consumer’s interests. On the other hand, the administrator meets the vendors at the marketplace on a daily basis. Therefore, the negative reward associated with offending these vendors (such as getting into trouble with a vendor) is comparatively greater. Moreover, siding with an errant vendor would not likely result in any negative reward from the customer but would instead earn brownie points with errant vendors. Who knows, perhaps the administrator would be getting freebies from these vendors later on?

Therefore, of the two behavior choices available to the administrator, the reward associated with “siding with the errant vendor” is comparatively greater. And this is how implementer bias occurs under reward interference.

**2.3.3.3 Institution Promotion Using Rewards**

Under certain circumstances, rewards can also be used to promote a desirable institution outcome when used appropriately.

For example, when the victims of official corruption take on the task of “observing corrupt behavior among officials”, as such behaviors have a direct impact on their interests (this is the negative reward inflicted on them as a result of corruption), these “monitors” would work very hard to complete their tasks.

**Example 2.9 The “Discharge in the Open” Policy**

A certain city has implemented a “discharge in the open” policy with enterprises, meaning that they are required to send out all discharged through known discharge channels equipped with instruments that measure discharge flow, chemical oxygen demand (COD) levels, pH levels, etc. This way, the enterprise’s discharge activities would be out in the open and the public would be able to monitor the activities of the enterprise at any time using readings from the instruments installed.

After the policy has been implemented, illegal discharge activities have more or less been eradicated in the area while the number of cases of discharges that do not meet environmental standards has also decreased significantly. In many towns and cities, apart from the professional environment control personnel sent by the state, many members of the public also took it upon themselves to become “volunteer environment control personnel”. Recently, when a chemicals factory created a secret discharge channel, residents living nearby reported the enterprise with the result that the enterprise was closed for a period and fined.

Commentary:

As members of the public suffer from pollution (i.e., a negative reward) caused by enterprise discharge, they tend to be the most motivated when it comes to the monitoring of enterprise discharge activities, with some even becoming “volunteer environment control personnel”. In this scenario, monitoring by members of the public is comparatively more effective. This is the promoter effect of the reward within the institution.

### ***2.3.4 Reward Measures Often Need to Be Paired with Bias-Prevention Measures***

The reward measure can enhance the proclivity on the part of the actor towards a certain behavior. This is why it is a widely used management measure. However, in many situations, the reward measure can promote more than one type of behavior by the actor. Therefore, the accuracy of the measure is typically not high, and thus the measure may induce the actor to opt for a certain other undesirable behavior instead. Under such circumstances, a certain bias-prevention measure (such as another reward measures or a resource measure or an opportunity measure) should be used in tandem to prevent the actor from showing behavioral bias.

Example 2.10 Case fabrication by special agents during the “White Terror” period in Taiwan<sup>1</sup>

During the “White Terror” period in Taiwan (following the retreat of the Kuomintang from the Chinese Mainland to the island), “any special agent who successfully caught a “criminal” would receive a large bonus and have the opportunity for a job promotion”. This resulted in Kuomintang agents to regard “the arrest of ‘undesirable elements’ as a way of climbing the job ladder”. In one example, several students in a naval school were accused by special agents of pledging to work for the Communist Party simply because of a letter that read: “We must study hard and stay on the straight and narrow, for anyone can become a useful person” (Chen 2013).

Another person who had been involved in such shenanigans claimed that some of the cases “manufactured” were “not products of the judiciary but created by ‘artists’”. At that time in Taiwan, intelligence officials would describe cases as being “made [up] well” or “not made [up] well”.

A classic example of this practice was the case of the “713 Penghu Incident” that had rocked Taiwan at that time. During the Civil War in China, over 10,000 students of the Yantai United High School fled to safety in Penghu, Taiwan. Due to manpower shortages, the local Kuomintang branch in Penghu made the

---

<sup>1</sup>Details for this case study were excerpted from Chen (2013). Narrative has been re-written for the purposes of this volume.



conscription into the local infantry regiment of students not yet sixteen years old but otherwise declared “fit for conscription” mandatory. This resulted in bloody clashes between unwilling students and the military. The special agents then set to “work”.

They first needed to find a “reason”, and this “reason” was to be that there was a large Communist spy organization within the school that was sabotaging the Taiwanese conscription effort.

Then, they went about collecting “evidence”. They began from the bottom rungs because individuals at the bottom yielded more easily. Then, connections were made up the food chain.

With the “evidence” collected, it was time for the piecing of the narrative. Case investigators interrogated arrested students for hours on end, then cherry-picked parts of conversations for case use like an author would do in writing a novel “based on true stories”.

Five individuals were picked from the arrested students and then observed for their respective personalities. Their “roles” in the “Communist spy organization” were crafted based on such observations. This way, the one who wrote well became a “propaganda member of the CCP”, and the physically strong fellow became “the one who was in command during the unrest”. Hence, these students became the “deputy troop leaders of the Yantai New Democratic Youth League”. Then, their confessions became the basis for the arrest of other “conspiring” students.

The narrative would only be convincing if more members of each troop were presented for the case. The five were first given the opportunity to think about who their “troop members” were. If no names were offered, investigators then presented the “deputy troop leader” with a name list.

Any talk of a large spy organization consisting of only five student leaders would not be very convincing. “Bigger fish” were needed by the case investigators. And so, the principal of the high school became a “member of the CPC Jiaodong Executive Committee” while the deputy principal became “member of the CPC Yantai Party Committee-cum-Head of the Yantai New Democratic Youth League”.

Clearly, torture was used to extract “confessions” during this process. In the short span of just over a month, case investigators were able to put together a case thanks to the use of nine torture methods. Finally, the case was handed to the Security Command in Taipei, and the two principals along with the five students were sentenced to death on the charge of “conspiring to overthrow the government using illegal means”.

Said the person who recalled the event: “Under torture, everyone was willing to work with the investigators’ narrative and thus created identities for themselves. They then also corroborated each other’s claims. With an identity made up, next came the actions. Again, they corroborated each other’s narratives, forming an intricate web of relationships within the narrative. This web of relationships had an internal logic, with each part highly interdependent, [and the entire narrative] complete enough to stand on its own.”

### Commentary:

In Taiwan, the opportunity for Kuomintang special agents “who successfully catches a [guilty] individual would receive a large bonus and the opportunity for a job promotion” was taken as “a stepping stone towards job promotions and greater wealth”. Clearly, this was a reward measure adopted by the Kuomintang at that time to motivate its special agents. However, with this reward measure, special agents had two possible behaviors to choose from: to work hard at solving cases in the honest way, or to fabricate cases. The problem was, in a situation where there were not many cases to solve, only by “fabricating cases” could an agent hope to move up the ladder. Hence, the use of just one reward measure in this case caused behavioral biases on the part of the special agents. The only way to ensure that the special agents did not abuse their powers was to implement a stringent judicial audit program in tandem. However, in reality, due to the lack of such a program many miscarriages of justice were committed during the “White Terror” period in Taiwan.

## References

- Chen X (ed) (2013) Just how terrible was the ‘White Terror’ in Taiwan? Tencent History 187, 17 July 2013. <http://view.news.qq.com/zt2013/bskb/index.htm>
- Duan S (1998) Identifying coal thieves using computers. Xinmin Evening News, 16 Dec 1998
- Gao F (2011) Preventive measures ‘Tofu-dreg Projects’ during the Ming dynasty. Health Herald, 30 Mar 2011

Five Basic Institution Structures and Institutional  
Economics

Sun, S.

2016, XVII, 216 p. 53 illus., 47 illus. in color., Hardcover

ISBN: 978-981-10-0343-1