Prerequisite Conceptual Understanding


Synopsis of the Case Study

The case is a study of the economic behaviour of a consumer confronted with various options. After attending a career guidance fair organised by her alma mater, Nitu Gupta (Nitu) was musing over her career pursuit. Once she made up her mind to take up MBA, the problem that stared at her was which B-School she should join. A chunk of this problem made a vanishing act as her scorings narrowed down her choice to B-Schools in clusters 4 through 8. B-schools in cluster 4 were the most satisfying ones available to Nitu on the merit of her scorings. Though these B-schools were equally satisfying, Nitu decided to join IBS, Hyderabad instead of Symbiosis Institute of International Business, Pune or Indian Institute of Technology – Department of Management Studies, Chennai. Behind her decision, there was a vigorous prompting of an economic principle – the maximisation of utility subject to the budget constraint.

Pedagogical Objectives

- To understand the concept and significance of ordinal utility in consumer’s decision making
- To explore the properties of an indifference curve as a tool of ordinal utility
- To analyse the concept of budget constraint and consumer’s equilibrium under the framework of indifference curve analysis.
Assignment Questions

I. What is meant by ordinal utility and how is it significant in consumer’s decision-making?
II. What do you mean by an indifference curve and what are its properties?
III. What does the concept of budget constraint imply and how does a consumer reach equilibrium under the framework of indifference curve analysis?

Teaching Plan

Both the Teaching Note and the Structured Assignment follow a specific Teaching Plan [Annexure (TN)-I].

Case Analysis Flow

I. What is meant by ordinal utility and how is it significant in consumer’s decision-making?

I began the class by discussing the concept of utility, which is central to all economic activities. People have wants and to satisfy their wants they take up efforts; and with their efforts, they produce the goods which satisfy their wants either directly, or indirectly by means of exchange for other goods. To make the discussion more interesting, I took the help of a circular graphic [Exhibit (TN)-I]. Since wants are unlimited, the efforts to beget goods to satisfy the wants are perpetually undertaken by human beings.

Exhibit (TN)-I
Utility in the Circular Graphic of Economic Activity

Prepared by the author
Goods are produced because they satisfy human wants. This attribute of goods with reference to human wants is known as utility. Thus, utility means wants satisfying power of a commodity. Utility plays a key role in decision making of a consumer. The more utility a consumer gets from a commodity, the more he or she would like to consume it. If a commodity is freely available, the consumer will consume it till the marginal utility of the commodity falls to zero. If the commodity has a price tag, the consumer will consume it till the marginal utility of the commodity is equal to what the consumer is paying as price.

Now I asked the students whether they can measure utility. Some said that they can’t express it in terms of ‘how much’, though they can feel whether they are getting more utility or less from one good compared to another. I elaborated on it by elucidating the position of cardinal economists like Alfred Marshall(Marshall) and AC Pigou (Pigou) on the one hand and ordinal economists like J.R. Hicks (Hicks) and R.G.D. Allen (Allen) on the other. Marshall and Pigou measured utility in terms of money that a consumer is willing to part with to have a unit of commodity. Hicks and Allen, however, pointed out that money can’t be used as a measuring rod since its own worth itself is changeable. Like any other commodity, money is also – though slowly – subject to the law of diminishing marginal utility. What at best we can say is whether a good or a combination of goods gives us more or less or equal satisfaction compared to the other. But we can’t say how much more or how much less. Moreover, this cardinal measurement of utility is not at all necessary to derive consumer’s equilibrium. Mere ordinal measurement is enough. The ordinal measurement requires the consumer to indicate whether a particular combination of goods gives more or less utility than the other or both give equal utility. In case both the combinations of goods are giving equal utility, the consumer is indifferent between the two. But for a consumer, a combination giving more satisfaction is preferable to one giving less satisfaction because a rational human being will prefer more to less as long as there is no situation of disutility. All the above ideas can be represented by a map of indifference curves where a higher indifference curve represents a higher level of satisfaction. On a particular indifference curve, the level of satisfaction is the same at all the points.

Career Launcher’s categorisation of B-schools into eight clusters (Exhibit IV of the case study) on the basis of some parameters can be represented as a map of 8 indifference curves [Exhibit (TN)-II], where cluster 1 is the highest and cluster 8 is the lowest in the order of giving satisfaction to the students.
For cluster 4, the relevant indifference curve is IC-IV; the various business schools included in cluster 4 are the various points on the indifference curve IC-IV. Since in any particular cluster the student is indifferent about which B-School to join, graphically he or she is indifferent amongst the points of an indifference curve.

II. What do you mean by an indifference curve and what are its properties?

I felt I must not stretch my discussion on the concept of ordinal utility too far without discussing the properties of the indifference curve. I explained that since an indifference curve gives equal level of satisfaction on all its points, it means if the consumption of a particular good in a combination of two goods increased, the consumption of the other good must be decreased as long as both have the potential to bestow utility. From this, it follows that an indifference curve must be downward sloping. It can’t be vertical, horizontal or, worse, upward sloping because – in the first case, it would mean more of Y and less of Y in combination with an unchanged X give the same satisfaction; in the second stage it would mean more of X and less of X with an unchanged Y give the same satisfaction; and in the third case it would mean more of both X and Y give the same satisfaction as the less of both X and Y [Exhibit (TN)-III (a), (b) and (c)].

As long as goods are goods and not economic bads, more consumption gives more satisfaction. Hence to say that points A and B give the same level of satisfaction goes against the rational assumption that more units of a good offer more total utility to the consumer.

The second important characteristic of an indifference curve is that it is convex to the origin. A downward sloping curve may be a straight line, concave to the origin or convex to the origin. A straight line downward sloping indifference curve would mean as more and more of good X is consumed, Y is to be given up at a constant rate [Exhibit (TN)-IV].
For gaining one unit of X (= bc), ab amount of Y is given up. Again for gaining one unit of X (=de), cd amount of Y is given up.

The straight line indifference curve implies that the slope of the indifference curve at c and e are the same. Hence, \( ab = cd \)

Proof:
Slope at c = \( ab/bc \)
Slope at e = \( cd/de \)
Since slopes at c and e are the same, \( ab/bc = cd/de \)
Or, \( ab/de = cd/de \) (Since \( bc = de = 1 \) unit of X)
Or, \( ab = cd \).

Similarly, it can be proved that a concave downward sloping indifference curve would mean as more and more of X is consumed, Y is to be given up at an increasing rate [Exhibit (TN)-V].
Concavity implies the slope of the indifference curve at e is greater than at c. Hence
\[ \frac{cd}{de} > \frac{ab}{bc} \]
Or, \[ \frac{cd}{de} > \frac{ab}{de} \] (Since \( bc=de=1 \) unit of X)
Or, \( cd > ab \)
It can also be proved that a convex downward sloping indifference curve would mean as more and more of X is consumed, Y is to be given up at a diminishing rate [Exhibit (TN)-VI].
Convexity implies that the slope of the indifference curve at e is smaller than that at c. Hence,
\[ \frac{cd}{de} < \frac{ab}{bc} \]
Or, \[ \frac{cd}{de} < \frac{ab}{de} \] (Since \( bc=de=1 \) unit of X)
Or, \( cd < ab \)
Since the law of diminishing marginal utility is a fundamental tenet of human behaviour, the marginal rate of substitution must necessarily be diminishing. Hence, the indifference curve must reflect this fact by becoming convex to the origin.
The third essential characteristic of an indifference curve is that it cannot be touched or crossed by another indifference curve. Were it so, it would mean that the satisfaction on a particular indifference curve is both equal and unequal compared to another indifference curve.
If indifference curves touched as at A [Exhibit (TN)-VII], it would mean satisfaction at B = satisfaction at A, and satisfaction at C = satisfaction at A. By the law of transitivity, satisfaction at B = satisfaction at C, though satisfaction at B < satisfaction at C. Thus, it is ridiculous to say that satisfaction at B is both smaller than and equal to the satisfaction at C.
If indifference curves crossed as at A [Exhibit (TN)-VIII], it would mean satisfaction at C = satisfaction at E. Since satisfaction at C > satisfaction at B, the law of transitivity makes satisfaction at E > satisfaction at B. But since satisfaction at D > satisfaction at E and satisfaction at D = satisfaction at B, then, satisfaction at B > satisfaction at E. Thus, it is absurd to say that satisfaction at B is both smaller and greater than the satisfaction at E.

Thus, there are three important properties of an indifference curve: it must be downward sloping, convex to the origin and must not cross or even touch another indifference curve in a map of indifference curves. As per Career Launcher’s categorisation of India’s well-known B-Schools into clusters, within each cluster, there is indifference among the B-Schools while “B-Schools in a particular cluster are more alluring than the ones belonging to a lower cluster and less alluring than the ones belonging to a higher cluster.”(page, para of the case study).

III. **What does the concept of budget constraint imply and how does a consumer reach equilibrium under the framework of indifference curve analysis?**

After analysing the properties of the indifference curve, I asked whether they would prefer a higher indifference curve or a lower indifference curve. Being satisfied with their answer, I made the poser what they would do if their budgets constrict their choice. Many correctly replied that they would seek the higher feasible point of satisfaction within the budget constraint. I took this opportunity to show them diagrammatically how a consumer achieves the equilibrium when he is confronted with a given a map of indifference curves coupled with a budget constraint [Exhibit (TN)-IX].

**Exhibit (TN)-VIII**

**What Would it Mean if Indifference Curves Crossed?**

![Graph showing indifference curves](https://via.placeholder.com/150)
I showed that points F, G, E & H are feasible points of consumption out of which E lies at the highest reachable indifference curve IC₁. The point N lies on a still higher indifference curve IC₃ but it is beyond the budget of the consumer represented by the price line PL. Hence, the consumer will reach the equilibrium when the price line is tangent to the indifference curve. This is because among the indifference curves touching or crossing the price line, the highest attainable one is the one that is tangential to it. Thus, point E is the point of consumer’s equilibrium. Other feasible points like F, G and H are not preferred since they do not represent the highest achievable level of satisfaction.

For Nitu, who was fancying her chances in clusters 4 through 8, cluster 4 was anytime preferable to clusters 5, 6, 7 and 8 but less attractive compared to clusters 1, 2 and 3. When her scorings actually made her eligible for admission to various B-Schools in cluster 4 through 8, it was easy to decide in favour of cluster 4 since that was the highest cluster available to her. “However, the problem that was perplexing her was what she should do if she got call from more than one institute belonging to cluster 4. Whether she should join IBS, Hyderabad or Symbiosis Institute of International Business, Pune or Indian Institute of Technology – Department of Management Studies, Chennai...” (page 11, para 1 of the case study). Eventually, Nitu decided to join IBS, Hyderabad since it was calculated to be the best her budget would permit. Other B-Schools in cluster 4 like Symbiosis Institute of International Business, Pune or Indian Institute of Technology – Department of Management Studies, Chennai would also offer the same level of academic satisfaction to Nitu. But she did not spare much thought on either of these institutes because these institutes are beyond her budget while not promising to give any greater satisfaction than IBS, Hyderabad. Though Nitu definitely coveted B-Schools in cluster 1 through 3, her choice narrowed down only to those institutes which she qualified for. Had Nitu qualified for a B-School in cluster 2, she would have gone for this provided her budget allowed the expenditure. Thus, a consumer tries to maximise satisfaction subject to his or her budget constraint.
Final Thoughts

Maximisation of utility leads to the consumer’s equilibrium. However, this maximisation is subject to the consumer’s budget. While there is much controversy over counting of utility, indifference curve analysis has rendered this controversy redundant. It is enough to give ordinal rankings to the utility derived and needless to try cardinal quantifications of it.

Additional Readings

## Annexure (TN)-I
### Teaching Plan

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<th>Analysis Section</th>
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<th>Ideal Duration (mins)</th>
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| 1      | Concept and Significance of Ordinal Utility | • Ordinal Utility vs Cardinal Utility  
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| 2      | Properties of an Indifference Curve | • Downward Sloping  
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Prepared by the author

**Big Picture**

When a consumer is indifferent amongst the options available, what goads her to settle for a definite selection?