# Extracting Consumption Value from Big Data and its Application[*]

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**Abstract.** Big data analysis is one of the hottest issues in information technology industries. It has been done in quantitative and statistic viewpoints. Observing huge amount of data, it is possible without doubt to establish a model that may predict purchase behaviors of consumers. But this approach can neither explain what brings the consumers to such decisions nor predict future purchase behavior of other product categories. Furthermore, it is not possible to reason about consumers' preferential differences that make choose or avoid certain places and shops. To answer this question, this paper argues that a qualitative analysis based on consumption values will be an alternative, and proposes the conceptual model of extracting consumption values from big data using clothing purchase as a case study.

**Keywords:** consumption value**,** big data, decision-making, preferential difference, smart consumption map

## 1    Introduction

Tracking consumption patterns has become one of the most highlighted issues in present day marketing. Before and during the era of industrialization, what had triggered production and consumption was the lack of commodities necessary to maintain social life. [1] But in the post-industrial era in which shortages of basic essentials no longer exist, consumers do not spend just for necessities. On the contrary, in the post-industrial era, what triggers consumption is the additional values assigned to goods which are not essential to be a good. In this new post scarcity society, what we consume is not a good itself but the values added on it. These values can be assigned and determined by various social relations. Since they are closely related with our identities, it is reasonable to assume that what we consume is those personal indwelling values.

In this aspect, extracting those values is worthwhile to track and analyze consumption so as to optimize efficiency and profitability. Statistical analyses using big data sources are mostly explored to figure out consumer preferences and

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[1] The term "social life", presented here, means not only physical life in the sense of survival but also the minimum quality of life in a relative sense.

consumption patterns. With these big data approaches, it may be possible to predict future consumption. However, these statistical methods are weak to clarify what are the relevant decision-making factors of such consumption. And as they are based only on pattern analysis of past consumption behavior related to specific product or category, it is difficult to use them to predict purchase behaviors concerning others. This problem is chiefly due to a lack of a relevant logical connection between those two separate choice structures.

For this reason, further study is needed to develop a logic model based on qualitative research instead of statistical approach to quantitative data. It may allow reasoning about future consumption behavior and planning persuasive marketing approach according to factors of consumer decision-making. In this context, we suggest the utilization of Floch's [1] theory of consumption values for the baseline of this discussion.

## 2   Basic Consumption Values

Floch proposed following semiotic square with four types of valorizations that could reveal what consumers want or what factors influence their buying behaviors.
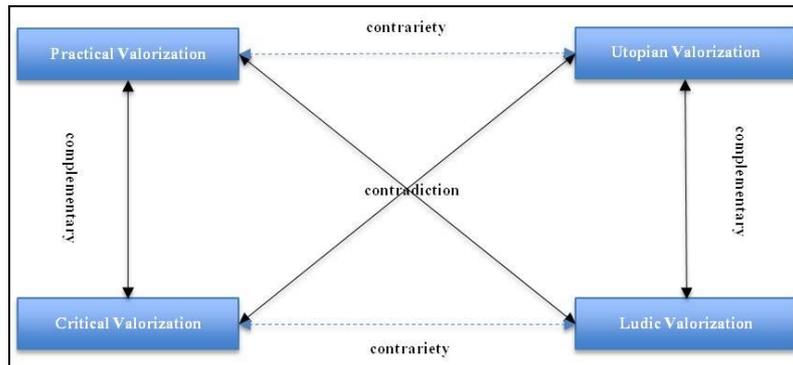


**Fig. 1.** Semiotic Square

Each of these ideas has merits and demerits. But they deserve to be regarded as fundamental for identifying key factors affecting consumer decision-making process which are summed up by Melo and De Lencastre [2] in the following way:

• Practical valorization: corresponds to the utilitarian values with specific and realistic aims. Accordingly, the product will be appreciated for being practical, functional and adequate to its function;
• Critical valorization: corresponds to the non-existential values, characterized by separation and comparison. Quality/price, economy, innovation/cost will be important criteria, frequent in critical evaluation;
• Ludic valorization: corresponds to the non-utilitarian values such as luxury, refinement, impulsive act. It lies at an emotional and sensorial level;

• Utopian valorization: corresponds to the existential values such as the identity and lifestyle. According to this valorization, the product will always be considered an accomplishment of something to satisfy customers' expectations.

Consumption values are subjective since they are measured by emotional evaluations. In fact, they are very personal and therefore each index of these values can vary from person to person. It should also be noted that evaluation and interpretation of these values can be changeable not only according to consumers, but also according to contexts in which they make purchasing decisions. Namely, even if interpreted by the same person, a same index can be understood differently due to various contextual factors [3].

## 3  Consumption Values from Big Data and its Interpretation

### 3.1  Extracting Consumption Values: A Case Study on Clothing Purchase Decision Process

Consumers purchase what please them. It is not easy to define and formulate 'please' because this is personal feeling that is not quantifiable. However, consumption values seem to be a clue to solve the problem. In this respect, this paper suggests a conceptual model that has reasoning capabilities of future purchase behavior. For this purpose, we have tried to identify how to extract consumption values from big data using clothes purchase as a case study.
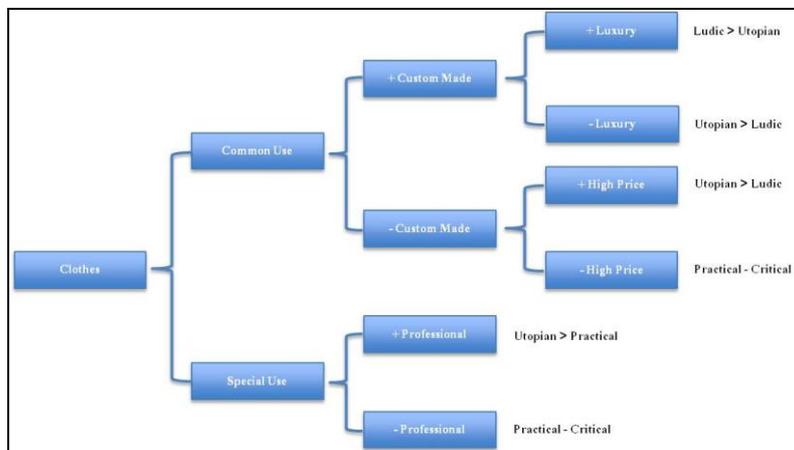


**Fig. 2.** The Conceptual Model of Clothing Purchase Decision Process and Consumption Values

Based on empirical evidence, Figure 2 shows a general and a simplified approach for classification of clothing purchase decision process and consumption values. Every value dimension presented above is widely acceptable under normal circumstances. Obviously, several influencing factors may be related to these value dimensions, such

as customer's individual variables, but they are not considered here.

### 3.2 Interpretation of Consumption Values

Regarding matching those extracted consumption values with empirical human behaviors, it is possible to propose a matrix interpretation as follows:

**Table 1.** Empirical Interpretation of Consumption Values

| Combinatory consumption value | Consumption patterns | Involvement | Loyalty to brand |
| --- | --- | --- | --- |
| Ludic > Utopian | Overspending Impulse buying Ostentation | Low | Low |
| Utopian > Ludic | Overspending Self-accomplishment | Low | High |
| Utopian > Practical | Rational consumption Self-satisfaction | High | Low |
| Practical - Critical | Rational consumption Quality/Price | High | Low |

The group that shows predominant ludic values has priority in the following order: ludic > utopian > critical > practical. For this group, quality/price, usability or necessities of goods are not under consideration. There are other considerations we take into account such as reputation or social values added to products. This group shows very impulsive spending and easily affected by what goes viral. Since consumers belong to this group care less about price, quality and usability, emotional approach could be the appropriate marketing strategy to stimulate consumer purchase decision. High price policy, giving superiority feeling, arousing jealousy are some of the most effective strategies for this group.

For the group where utopian values are predominant, there are two different subgroups according to the valorization of self-implementation. The first subgroup has priorities in the order of utopian > ludic > practical > critical while the second has utopian > practical > critical > ludic order.

Firstly, utopian > ludic oriented consumers have a tendency of self-implementation and self-satisfaction. And they often ignore someone's eyes. For consumers of this type, price is not under consideration. It may be expensive but cheap too. They want to be different and stand out from others by possessing special items regardless of the price. Sometimes relatively inexpensive products can be used as icons of special social values or of particular social classes and groups. In fact, their self-realization is not always relied on high quality/high price products, but rather they tend to insist particular brand showing strong loyalty to them. On the other hand, utopian > practical oriented consumers are inclined to realize themselves through special activities instead of purchase. For them, purchase is only complementary fulfillment of their primary goal of self-realization. One such example is sportswear and

equipment brands.

Practical > critical oriented consumers tend to spend very rationally considering necessity and quality/price. This is the most common consumption value of usual consumers under normal circumstances if there are no variables. For consumers of practical > critical orientation, informative advertising is the most effective approach to induce purchases.

According to Figure 1, as noted earlier, it is expected that utopian-critical and practical-ludic combinations do not occur, as they are contradictory values. Those who have great utopian orientation, show tendency to purchase goods which are beyond their financial condition but fulfill their utopian values. For them, critical values, related to price or quality, do not matter. Because of this reason, practical-ludic and ludic-critical combinations are also excluded from discussions. These combinations are observed when people buy goods just for fun without further consideration.

### 3.3  Application

The conceptual model previously presented focuses not on frequency but on meaning of purchase behind. As shown earlier, it is possible to extract consumers' consumption values in combinatory ways from big data. And once value orientation types are tracked for individual or collective consumers, it will be possible to offer customized smart services for consumers in omnidirectional ways.

Before, statistical analyses using big data sources have shown only purchasing patterns of consumers but do not say about their preferential differences between same category of products and shops. For example, in quantitative approach, purchase patterns of consumers can only predict possible future purchase behavior for the same categories. If consumption patterns is extracted from clothes buying, it is only applicable for clothing purchase behavior because there are no universal features that can describe or explain consumer's behaviors.

But in qualitative approach proposed here, the consumption values extracted from big data to track consumers' purchase behavior can be considered as universal properties of consumers in question. Thus, these values can be extended to predict purchase behavior of other categories. Furthermore, it makes possible to explain why consumers choose or avoid certain places and shops where sell same kind of products.
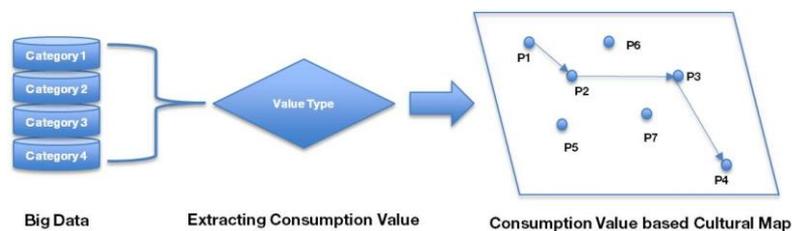


**Fig. 3.** Using Big Data Modeling to Create Smart Consumption Tracking Tool

This conceptual model, then, can be used to offer customized smart map for

individuals according to their consumption values.

## 4  Conclusion

Statistical analysis of big data to predict purchase patterns of consumers is meaningful in the sense that it can predict future customer behavior by past performance. However, it is not an appropriate approach because its implication is limited to the purchase of same category and fails to explain consumers' decision-making process and preferential difference. On the other hand, qualitative approach based on consumption values solves those difficulties because certain values that affect more significantly consumer's attitudes and purchase decisions can be considered as decision-making factors. Consumption values based on qualitative analysis of big data can also allow creating smart cultural map reflecting consumers' preferential differences.

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