Discussing Laddering Application by the Means-End Chain Theory

Tânia Modesto Veludo-de-Oliveira
University of São Paulo, tveludo@usp.br

Ana Akemi Ikeda
University of São Paulo, anaikeda@usp.br

Marcos Cortez Campomar
University of São Paulo, campomar@usp.br

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Abstract

This article aims at analyzing laddering as a technique of qualitative research, emphasizing the procedures for data collection, analysis and interpretation, and its main limitations as well. "Laddering refers to an in-depth, one-on-one interviewing technique used to develop an understanding of how consumers translate the attributes of products into meaningful associations with respect to self, following means-end theory" (Reynolds & Gutman, 1988, p. 12). The critical literature review shows that laddering is useful in studies on human behavior, especially those related to the Means-End Chain (MEC) model. For a successful application, highly trained interviewers, homogeneous groups of respondents, and the Laddermap should be taken into consideration.

Keywords

Laddering, Methodology, Means-End Chain, Value, and Behavior

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Tânia Modesto Veludo-de-Oliveira, Ana Akemi Ikeda, and Marcos Cortez Campomar
University of São Paulo, São Paulo, Brazil

This article aims at analyzing laddering as a technique of qualitative research, emphasizing the procedures for data collection, analysis and interpretation, and its main limitations as well. "Laddering refers to an in-depth, one-on-one interviewing technique used to develop an understanding of how consumers translate the attributes of products into meaningful associations with respect to self, following means-end theory" (Reynolds & Gutman, 1988, p. 12). The critical literature review shows that laddering is useful in studies on human behavior, especially those related to the Means-End Chain (MEC) model. For a successful application, highly trained interviewers, homogeneous groups of respondents, and the Laddermap should be taken into consideration. Key Words: Laddering, Methodology, Means-End Chain, Value, and Behavior

Introduction

The laddering technique emerged in the clinical psychology area introduced by Dennis Hinkle (1965) in order to model the concepts and beliefs of people. Hinkle's work, a PhD dissertation at Ohio State University, although awarded, was never published, but was treated extensively by Bannister and Mair (1968) who coined the term "laddering".

Hinkle (1965; as cited in Bannister & Mair, 1968) developed the laddering technique as a means of modeling people's belief structures in a simple, systematic way, establishing individual's superordinate personal constructs. The technique is well established in the field of psychology, but has spread out from there to other areas like marketing, advertising, architecture, information technology, and organizational management to name a few (Rugg, Eva, Mahmood, Rehman, Andrews, & Davies, 2002). Its application, however, is still timid in others areas such as medical and nursing.

Laddering is highly recommended in research that elicits hierarchical constructs and can became especially popular in investigating personal values according to the models of the Means-End Chain (MEC) theory (Botschen, Thelen, & Pieters, 1999; Dibley & Baker, 2001; Gengler, Mulvey, & Oglethorpe, 1999; Gengler & Reynolds, 1995; Lastovicka, 1995; Lin, 2002; Reynolds & Gutman, 1988; Reynolds & Whitlark, 1995; Valette-Florence & Rapacchi, 1991; Vriens & Hofstede, 2000; Wansink, 2000; Woodruff & Gardial, 1996).

This article aims at presenting the laddering technique within a qualitative approach according to the MEC approach. A bibliographical research was conducted to serve as a basis for the general description of laddering. It has been chosen to describe laddering via the MEC theory, since it provides a holistic illustration on how to develop and run such technique in a research. Procedures for data collection, analysis, and interpretation are presented in this paper, as well as the limitations and challenges involved in the laddering implementation. In addition, the use of Laddermap is discussed, and examples related to educational services illustrate the laddering application through the article.
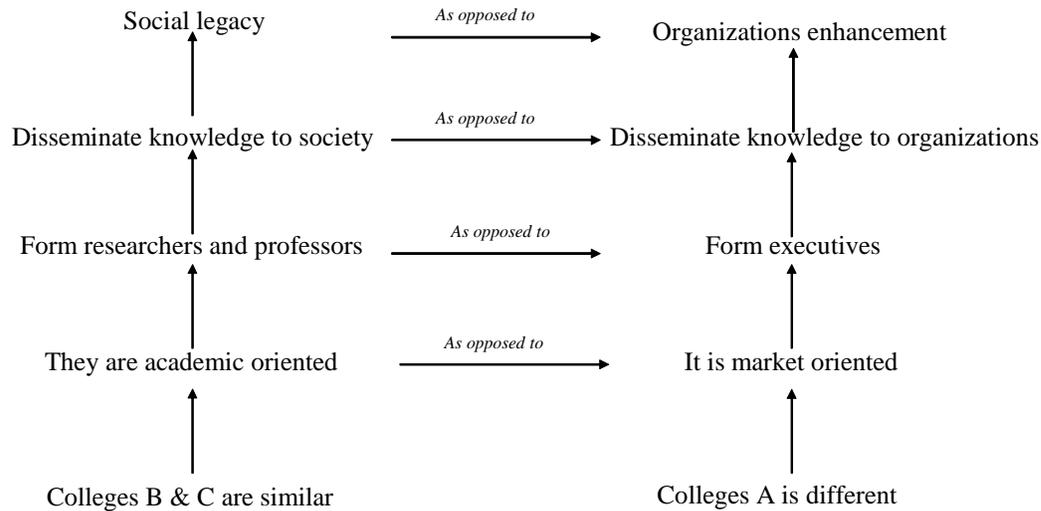
Personal Construct Theory

Laddering has its roots in George Kelly's personal construct theory (Kelly, 1955), which was one of the early cognitive approaches. A comprehensive explanation on this facet of laddering is given by Bourne and Jenkins (2005). According to them,

> Kelly argued that individuals create templates of their world by means of finite numbers of dichotomous or bipolar constructs that are organized hierarchically, and that provide a basis for choice according to their preferences for one pole over the other. (p. 411)

The tool used to explore people's personalities in terms of this theory is called "repertory grid," which is an interviewing technique suited to elicit information about a given element, which might be a situation, a person, an object, an event, and so forth. As a student of Kelly, Hinkle (1965) developed the laddering technique to bring out constructs at higher levels of abstraction by analyzing the implications of a change in one construct on the rest of the hierarchical system. Kelly (1955) suggested beginning the process by generating bipolar constructs of similarity and comparing them by "triadic sort".

In a triadic sort, three distinguished elements are presented to a respondent, who is asked about similarities and differences that two of them have in relation to the third. In the hypothetical example of Figure 1, a respondent considered three colleges for a triad sort, stating that two colleges were alike due to their academic orientation, as opposed to the third that has a market orientation. This reveals the poles and the hierarchical constructs. The next step is to ask respondents to choose which side of the bipolar construct they prefer and why. In Figure 1, the individual declared that he/she preferred colleges that "form researchers and professors" (i.e., academic oriented) over those that "form executives" (i.e., market oriented). The process is finished when the individual no longer can explain his/her preferences. At this point the top is reached, disclosing a personal value priority that in this example is "social legacy" or "organizations enhancement."

Figure 1. An example of triad sort.

Social legacy → *As opposed to* → Organizations enhancement

Disseminate knowledge to society → *As opposed to* → Disseminate knowledge to organizations

Form researchers and professors → *As opposed to* → Form executives

They are academic oriented → *As opposed to* → It is market oriented

Colleges B & C are similar   Colleges A is different

In which way are two colleges similar, and different to the third?

Source: Based on Bourne & Jenkins (2005).

Means End Chain Theory

As laddering is particularly suitable to bring out people's goals, values, and dimensions, the MEC theory is a good frame to reach this purpose since it has a systematic and hierarchical order to be followed. The MEC model was conceived in order to supply a theoretical structure capable of linking consumers' values to their behavior. It is an adaptation of Hinkle's laddering method (1965), especially designed for use in consumer and organization researches, but due to its versatility it is also becoming popular in other areas. Its presentation in this study intends to illustrate how the technique can be developed to elicit personal values. However, its conception can also be extended to other hierarchical reasoning and can be applied to a variety of qualitative research projects.

Gutman (1982) defines MEC as,

> Means are objects (products) or activities in which people engage (running, reading). Ends are valued states of being such as happiness, security, and accomplishment. A means-end chain is a model that seeks to explain how a product or service selection facilitates the achievement of desired end states. (p. 60)

MEC links sequentially product attributes (A) to consequences of product use (C), and to individuals' personal values (V). An A-C-V sequence forms, what Gutman (1982) called, the means-end chain or ladder. The set formed by various ladders is represented on the Hierarchical Value Map (HVM), which indicates the relationship between all the attributes, consequences, and personal values relative to a product. A HVM is a tree-like

graph that illustrates the major means-end connections people perceive between attributes, consequences, and values. These attributes typically are perceived as a means to achieve a set of specific consequences, which in turn aid the individual in achieving a smaller set of specific personal values. Hence, the graph illustrates how the large number of attributes essentially funnels into a small set of personal values through the consequences of product usage.

The MEC model emphasizes why and how products are important in individual's life, going beyond the understanding of their functional properties. There are four assumptions that support this idea. First, that personal values defined as final desired states of existence play a dominant role in directing individual's choice. Second, that people group in sets or classes, the diversity of products that present themselves as potential means of satisfying needs and values. Third, that all people actions have consequences; and fourth, that people learn to associate a particular consequence with particular actions (Gutman, 1982). Botschen et al. (1999) argue that attributes do not explain the reasons that lead a person to buy or use a good or a service, or to engage in some activity. Therefore, from the people's point of view, it is not the product's attributes that in fact matter, but the problem solution coming from consequences or subsequent personal values.

In this vein, Gutman (1982), based on Rokeach (1973), asserts that consequences have both positive and negative valences, depending on the relationship established with personal values. The desire for positive consequences and the acceptance of negative consequences, therefore, are determined by the personal values with which they are associated. For example, students may understand the effort put into hours of study as a negative consequence associated with the rigorous course demands (product attribute). However they insist on continuing the course and overcoming this negative consequence because they believe that their objectives (personal values) will be achieved by means of this effort. The students may believe, for example, that such an effort (negative consequence) will be outweighed by the higher level consequence of "professional recognition" and the satisfaction of the personal value for a "sense of achievement."

Olson and Reynolds (1983) proposed some modifications on Gutman's (1982) model, broadening the chain levels. The broadened model recommends that the attributes be subdivided into concrete and abstract, consequences into functional and psychological, and personal values into instrumental and terminal (Botschen et al., 1999; Valette-Florence & Rapacchi, 1991). Each of the six hierarchical labels is discussed in more details.

1. Concrete and abstract attributes: "Attributes are features or aspects of products or services" (Valette-Florence & Rapacchi, 1991, p. 31), they are relatively concrete meanings that represent physical or perceptible characteristics in a product (Gengler et al., 1999). They can be understood as characteristics of products, services, or behaviors that are preferred or sought by consumers (Botschen et al., 1999), or that are normally described by them (Woodruff & Gardial, 1996), and what is in the real product that produces consequences (Valette-Florence & Rapacchi, 1991). Attributes are at the lowest level in the chain and are subdivided, varying within a continuum that goes from the concrete to the abstract (Lin, 2002). Concrete attributes are defined as the directly perceptible physical characteristics of a product. Examples are price,

color, and weight (Vriens & Hofstede, 2000), while abstract attributes refer to relatively intangible characteristics, such as style and brand (Lin) or perceived value (Botschen et al.).

2. Functional and psychological consequences: Consequences are at the intermediary level in the chain and have a more abstract meaning that reflects perceived benefits (or costs) associated with specific attributes (Gengler et al., 1999). They are characteristics that are less directly perceptible in a product or brand, and are the result of various attributes combinations and the product use by the consumer (Vriens & Hofstede, 2000). Consequences are what the consumer feels after consuming the product; this might be a positive or a negative feeling (Lin, 2002). In specific situations they represent behaviors (Valette-Florence & Rapacchi, 1991). Functional consequences act directly on the consumer from the time the product is consumed (Valette-Florence & Rapacchi). "Examples are ease-of-use, comfort, and convenience" (Vriens & Hofstede, p. 6). Psychological consequences, on the other hand, are produced by functional consequences, such as when the product use produces a sophisticated image or status (Valette-Florence & Rapacchi).

3. Instrumental and terminal values: Personal values provide general guidance (Valette-Florence & Rapacchi, 1991) and are part of our lives. They determine, regulate, and modify relationships between individuals, organizations, institutions, and societies (Dibley & Baker, 2001). Personal values are generally defined as beliefs and relatively stable cognitions that have a strong emotional impact. Examples are security, happiness, fun, and enjoyment (Vriens & Hofstede, 2000). Values are at the most abstract level in the chain, and as originally suggested by Rokeach (1973), are subdivided into instrumental and terminal values. Terminal values represent the final states of existence, that is, they are the goals we seek in life, such as peace, self-achievement, and prosperity. Instrumental values are ways of behaving that lead to terminal values, such as ambition and resourcefulness that might be necessary for achieving prosperity, for example.

Data Collection

The laddering technique indicates a series of guidelines for primary data collection, highlighting some procedures to be followed during the interview. Wansink (2000) draws a parallel between a laddering probe and a psychologist work because the technique leads to uncover insights. He states,

> A laddering interview is similar to the classical picture of a psychologist interviewing a patient on a couch and uncovering insights into their lives that aren't apparent to even the patient. The psychologist is trying to get to the root of the problem through. (p. 30)

Initially, in the laddering probe, the respondent is asked about what kinds of features would be useful to describe or distinguish different products (following somehow the triadic sort procedures previously discussed). The goal of this first step is to ask the respondent to mention the main product attributes. Considering an example of educational services, the interviewer can ask, "In your opinion, what is the main difference between an outstanding school and an ordinary one?" "An outstanding school has excellent faculty," could be the answer. The faculty is considered an attribute of educational services, which is the product. It should be highlighted that some answers for this initial questioning, rather than be related to attributes, can refer to consequences or personal values. However, Woodruff and Gardial (1996) argue that experience has shown that probably the initial answers will refer to attributes and that the other dimensions of the value hierarchy should be built based on the indication of these features.

Based on the initial answer of the respondents that refers to attributes, the value hierarchy begins to be built, where the researcher discusses the reasons of preferences pointed out by the respondent, and with this, manages to move the answers to an abstraction level corresponding to consequences and personal values. In the laddering interview, respondents are encouraged by means of repetitive and interactive questions, to dig deeply into the discussion about attributes, gradually indicating consequences and personal values. The interviewer leads the respondent to abstraction, by asking him/her why that attribute (or consequence) is important. In this sense, questions such as "why is this important to you," "what does it mean to you," and "what is the meaning of this product having (or not) this attribute" are repeatedly asked with the objective of making the respondents express consequences that are derived from attributes and personal values that arise from consequences. The same questions are used to discover consequences and personal values. Wansink (2000) states that questions are continually asked until a personal value is revealed. As such, the laddering interview is quite personalized because it depends essentially on the respondent's answers to keep going, having as basic question, "Why is it important?" For example, the interviewer can ask to a graduate student, "Why did you choose this school?" The respondent's answer can be "because this school offers a good course at a reasonable price." The interviewer can continue, "Why is it being reasonable priced so important to you?" The respondent's answer can be "attending a quality course that is not high priced makes me fell responsible about my family because I am spending our money wisely."

Although the discussion on laddering limitations is placed with more details in a specific section in this article, it is worthwhile to address some criticisms related to the data collection procedures. In this sense, Woodruff and Gardial (1996) advert that repetitive questions can make issues to become obvious to the respondents, and the investigation turns out to be exhausting. Thus, it is important to inform the respondents about the peculiarities of the technique, making it clear that the procedures adopted are part of a specific methodology. Botschen et al. (1999) state that one common criticism to the means-end approach is that when asking the question "why," artificial levels of abstraction can occur because the respondents can answer in a "rational" way, trying to find arguments to justify their behavior. Reynolds and Gutman (1988) point out other problems arising from this kind of interview. One of them is related to the possibility of the respondents not knowing to answer one question, due to the lack of previous thinking or because they cannot reflect over the reasons of its significance. Another problem can

be caused by the fact that questions become too personal and consequently, inhibit the respondents' natural flow of speech. A sign that this is happening is when the respondents do not move the answer to a higher level, insisting on sustaining it on the same level or even going back to a previous level. Other evidences for this problem appear when respondents say they do not know how to answer the question, remain silent, or formulate arguments as an attempt to talk around the issue.

Regarding the identified problems, Reynolds and Gutman (1988) propose some ways to solve or minimize them.

- Evoking a situational context: This technique consists on asking questions taking into account a specific situation. Respondents feel more comfortable in answering questions that are linked to a real context or event.
- Laddering works best when respondents are providing associations while thinking of a realistic occasion in which they would use the product;
- Postulating the absence of an product: This technique is used to "unblock" respondents when they cannot move beyond a certain level, and to encourage them to consider what it would be like to lack an product, assuming that the respondent will use "substitution" arguments when imagining him/herself without a product's characteristic, or without the product or without a consequence of use;
- Negative laddering: This technique is particularly relevant when respondents cannot articulate why they do the things they do. Instead of asking them why they act or think in a certain way, the respondents are asked why they wouldn't act or wouldn't think that other way;
- Age-regression contrast probe: Moving respondents backward in time is another effective device for encouraging respondents to remind of their past habits and compare them with their current life;
- Third-person probe: This technique is used to make respondents feel more comfortable to express their opinion. When respondents find it difficult to identify their own motives, or to articulate them, we can ask how others they know might feel in similar circumstances. In fact, this way they verbalize their own way of acting and feeling;
- Redirecting techniques (silence and communication check): These techniques consist of directing the answer to the respondent again. Silence on the part of the interviewer can be used to make the respondent keep trying to look for a more appropriate or definite answer without further interferences. Communication check simply refers to repeating back what the respondent has said and asking for clarification, essentially asking for a more precise expression of the concept.

Reynolds and Gutman (1988) point out two other techniques, in case the respondent does not feel comfortable with the questions because they are becoming too intrusive. One of the techniques can be used when the interviewer reveals a personal relevant fact about him/herself in order to build rapport with the respondent. The second, and most common technique, is used so that the respondent does not feel pressured, and consists of making a note of the problem area and returning back to the issue when other relevant information is uncovered later in the interview.

Wansink (2003) sums up the main points that should be prioritized in a laddering interview: (a) ask questions that can reveal personal reasons, (b) ask questions that lead the person to think and answer with a sentence, not just responding with a "yes" or "no," (c) keep asking "why," (d) question people's reasons for their answers, (e) allow the questioning to flow, (f) ask questions that give the respondents' free reign to answer the question as they feel is more appropriate, and (g) watch the people's facial expressions as they answer the question and listen to the tone of their voices.

Finally, the importance of the interviewer's presence in this stage of the probe, that requires an interviewer with qualitative interviewing skills, should be highlighted (Vriens & Hofstede, 2000), as the right questions are difficult to come by and the interviewee may be nervous or uncomfortable with the line of questioning. A skilled interviewer is required to conduct the interview (Wansink, 2000).

Data Analysis and Interpretation

Based on Gengler and Reynolds (1995), we can summarize the laddering analysis and interpretation steps as follows.

- Data reduction (data conversion into separated phrases);
- Content analysis of the element selected in the previous step;
- Summation of relations in content codes, resulting in an implication matrix of all paired relationships; and
- Construction of a diagram to meaningfully represent the main implications of the study, the HVM.

As indicated above, the first step is the reduction of data originated from interviews into separated phrases. These phrases are basic elements in which the subsequent analyses are based. This involves a thorough review of the verbatim notes of video/audio tapes of the interview, to identify the elements that better represent the expressed concepts by each person individually. Then, the content analysis is conducted. The content analysis results in idiosyncratic concepts, which are categorized under codes. Each code is identified as an attribute, consequence, or value, which means that all data are categorized into elements. There is a common coding for all products involved into the laddering interviews. Table 1 shows the content analysis results for an example of educational services.

Table 1
Summary Content Codes for Educational Services

Code.	Concrete attributes	Code.	Abstract attributes	Code.	Functional conseq.
01	Faculty	06	Theoretical and practical emphasis	09	Personal effort
02	Infrastructure				
03	Admission process	07	Requirement		
04	Research activities, conferences and publications	08	Reputation		

05	Position and degree				
Code.	**Psychological conseq.**	**Code.**	**Instrumental values**	**Code.**	**Terminal values**
10 11 12 13	Social approval Self-image Feeling of intelligence Feeling of security	14 15	Self-confidence Social recognition	16	Self esteem

The following step is to generate an implication matrix, which serves as a method of bridging the gap between the qualitative and quantitative aspects of the technique (Devlin & Birtwistle, 2003). Reynolds and Gutman (1988, p. 20) states, "such a matrix will be a square matrix with a size reflecting the number of elements one is trying to map." All elements selected in the previous stage are allocated according to their codes within the columns and rows of a numerical table, forming a matrix. All interactions among the elements originated from the qualitative data are verified. The implication matrix calculates the number of times each element leads to each other element. Two types of relation may be represented in this matrix: direct relations and indirect directions. Direct relations refer to implicative relations among adjacent elements, whereas indirect relations refer to connections among elements when there is another element between them. The number of relations is presented in the fractional form with the direct relations to the left of the decimal and indirect relations to the right of the decimal. Table 2 illustrates an implication matrix originated from laddering interviews related to educational services. The first row of the Table 2 expresses that three respondents associate the element 1 (faculty) directly to element 4 (research activities, conferences, and publications), and nobody associates indirectly these elements since the cell formed by the union of element 1 and element 4 is 3.00. Similarly, the element 1 (faculty) was six times directly associated to element 7 (requirement), and these elements are not indirectly connected, forming the cell 6.00.
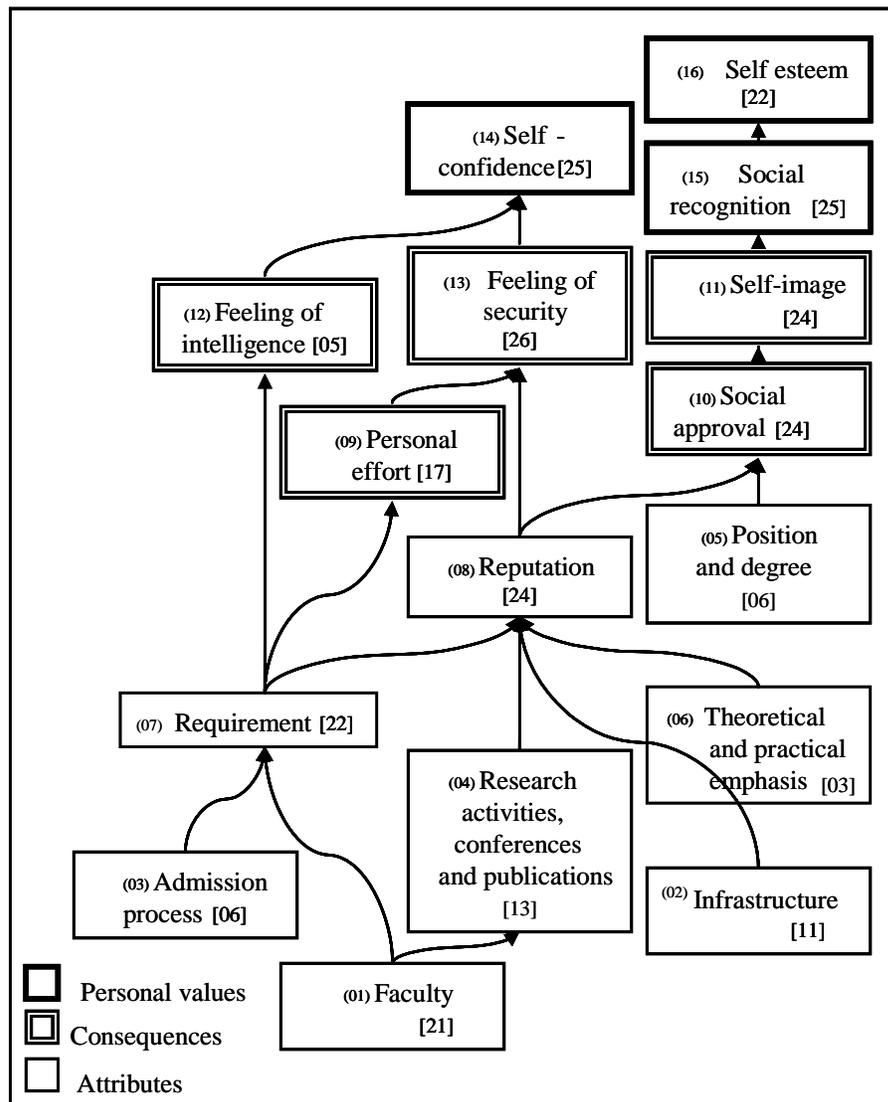
Table 2
Summary Implication Matrix

Code	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
01				3.00			6.00	0.01	0.03	0.01	0.01	0.01	0.02	0.01	0.01	0.01
02								5.00		0.01	0.01		0.01	0.01	0.01	0.01
03							2.00	1.00	0.01	0.01		0.01				
04								4.00		0.01	0.01		0.01	0.01	0.01	0.01
05										2.00	1.00				0.01	1.01
06								1.00		0.01					0.01	
07								2.	5.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							▓	00	0	1	1	0	1	1	1	1
08								▓		3.00	0.01		0.01	0.01	0.01	0.03
09									▓				5.00	0.03		
10										▓	5.00				0.04	0.04
11											▓				5.04	0.04
12												▓		2.00		
13													▓	10.05		
14														▓		
15															▓	5.00
16																▓

A HVM is then produced based on the results of the implication matrix. A HVM gives a graphic presentation of all the most frequently mentioned attributes, consequences, and values, and it consists of a series of nodes, connected by lines, representing the aggregate of the respondents' ladders. The cut-off criterion determines which connections should be included in the HVM. Each association is compared with a cut-off level, if the association between two dimensions appears in a greater or equal number to the cut-off level, it appears in the map; otherwise, it does not. By selecting a cut-off point of more than one, the complexity of the results is reduced and therefore the clarity of the HVM is increased, as only those links that are mentioned more often are represented in the map (Devlin & Birtwistle, 2003). The laddering results can be used to create an HVM summarizing all interviews across individuals, which is interpreted as representing dominant perceptual orientations, or "ways of thinking" with respect to the product category (Lin & Fu, 2001). Figure 2 shows the HVM of educational services.

Figure 2. Hierarchical value map of educational services.

Laddermap

The Laddermap is a marketable software and consists of a variation of the traditional laddering method, as it brings innovations and some modifications in data treatment. It was developed by Gengler and Reynolds (1995) to act as a support tool to the laddering analysis. Lastovicka (1995) explains the stages of the Laddermap computational analysis.

> Laddermap is not an automated interviewing protocol for collecting laddering data through a computer-driven interview. There are, however, four tasks that Laddermap does do for the researcher with laddering interview data in hand. Laddermap provides a data entry and content analysis system for qualitative laddering data, tabulates an implication

matrix, portraying the degree of connection between the various attributes, consequences, and values, creates a HVM map from the implication matrix and enables the user to edit the HVM map or otherwise make it easier to use and understand, and produces a set of "Advanced User" files that can be used as input to other analyses. (p. 494)

Analysts should separate answers from each respondent in sentences or key-words so that they can enter these raw data into the program. While entering the data, analysts should classify them into attributes, consequences, or personal values. This classification establishes the theoretical basis of the analysis and helps to distinguish what are the relevant key words. Then, a content code dictionary is defined to perform classifications. The program aids the coding of elements, and the signature of each sentence is needed inside the codes. The software permits the analyst to check the code assigned to each element, and permits conversion of sentences with the same meaning into synonyms. The Laddermap groups the elements in accordance to the dimensions to which they belong. The tabulation of the implication matrix involves the definition of connections between content codes. The software implements a decision rule in its HVM construction algorithm that automatically performs the construction of an aggregate implication matrix, and allows the analyst to determine a cut-off level to select the most important relations. The Laddermap also allows implications matrices to be generated for different segments, making associations with codes that refer to demographic aspects of the respondents.

When making an assessment of the software, Lastovicka (1995) concludes that it is a useful tool that saves time in the laddering analysis. However, Laddermap does have its drawbacks. According to the author, the software is designed for those who are already familiar with laddering terminology and MEC theory. The Laddermap does not support mouse use, which makes the HVM edition difficult; the graphics, most of the times, must be redrawn to be interpretable to others besides the analyst. Perhaps the greatest limitation of the program is the fact that the A-C-V chains produced by the software are not necessarily held by any of the respondents providing the laddering data because they can mix answers from other people. So in order to obtain a good result, it should be guaranteed that a homogeneous group is selected.

Limitations of laddering

It is important to consider that by approaching personal aspects in different levels of abstraction, the laddering interview can present difficulties to the respondents, demanding skills from a trained researcher to overcome such a block. Botschen et al. (1999) remind us that the content analysis necessary for this method is too time-consuming for the researcher, and can result in high costs and great complexity. Considering these issues, Gengler and Reynolds (1995) state,

Two major obstacles exist to the proliferation of laddering as a management tool. First, the sheer magnitude of tedious work an analyst must perform to complete an analysis adds excessive costs to any study. Second, many who are familiar with the technique still have difficulty

bridging from data to strategy to executional design and implications. (p. 19)

Grunert and Grunert (1995) have assessed the validity of laddering, based on the assumption that the method has a predictive objective, which is to prescribe individuals' behavior based on the recognition of their cognitive structures. When analyzing the predictive validity of laddering, the authors find biases originated from possible interferences from the interviewer in raw data collection and in content analysis. With respect to raw data, Grunert and Grunert consider that the method does not bring negative implications. Although the interviewers' thoughts can have considerable influence on the course of the interview, they will not suggest attributes, consequences, and personal values to the respondents, who are let sufficiently free to use their own cognitive structure and answer the questions.

However, regarding other aspects of data collection, the opinion of these researchers are not the same. They believe that if the respondents have little knowledge about a product, but the interviewer encourages them to move to a higher level of abstraction, they can elicit new associations only to fit into the research's requirements. Analogously, they state that if the respondent is knowledgeable about the product, they can find difficulties in following the hierarchical format of laddering. Besides, Grunert and Grunert (1995) believe that the interference from the researcher in content analysis can also be source of bias. When coding the elements, the researcher tries to reconstruct the meaning that the respondents assigned to concepts during the interview. The difficulty of this task depends on data redundancy, when many respondents indicate similar A-C-V sequences, the job of reconstructing the chain is easier. Lin (2002) also criticizes content analysis. He asserts that when defining the elements, the variables are selected and grouped according to a subjective process, which may lead to the elimination of relevant variables.

Another limitation pointed out by Lin (2002) is the simplification process of variables in the attributes, consequences, and personal values categories. Although necessary, this process can restrict the scope and depth of answers, which could not really reflect the real thoughts from respondents. In the coding process, Grunert and Grunert (1995) recommend more transparency and use of computer-aided content analysis methods.

In relation to the laddering data analysis and interpretation, when constructing the HVM, Lin (2002) notes that problems can occur in the pre-definition of the cut-off level, which is also a reason for criticism by Grunert and Grunert (1995) because there is not a statistical criteria to select the ideal cut-off level. Grunert and Grunert explain that the ladders obtained from the interview with an individual respondent only reveal aspects of cognitive structure of this individual, not representing the cognitive structure per se, because it is not a simple chain collection, but rather an inter-related network of associations. On the other hand, they consider that in a homogeneous group of respondents, the set of ladders obtained when taken together and analyzed by an appropriate algorithm, produces an estimate of cognitive structure of this group as a whole. In fact, Grunert and Grunert remind us that the decision of the cut-off level is crucial to avoid errors like these. This limitation is compensated by the Laddermap that provides alternatives of cut-off level.

Final Discussion

Aside from limitations, laddering shows itself as an advantageous method for understanding behavior and can contribute to numerous areas. It should be kept in mind, however, that this is not the only technique that aims at such goals. Given the information presented in this article, the use of laddering should take into consideration some points regarding its steps and variants. Therefore, it is recommended:

- to prioritize the qualification of the interviewer and researcher who should master MEC theory, and have skills consistent to the good performance of in-depth interviews and analysis of qualitative data;
- to assure that the respondent group is sufficiently homogeneous and numerous so as to favor redundancy of answers, and facilitate the categorization of elements in the step of content analysis;
- in the step of data collection and interview: follow the suggested proposals in order to conduct a good interview, putting into practice the techniques suggested by Reynolds and Gutman (1988) and follow Wansink´s cues (2000);
- to devote itself to content analysis, through exhaustive readings, rereadings, and analysis of interview material;
- to value the reliability of results, and according to Lastovicka's recommendations (1995), to minimize risks involved in the construction of the matrix with the utilization of the Laddermap, that performs all the operations in this stage of analysis and data interpretation, saving work from the researcher involved in the construction of the matrix and reducing chances of errors;
- to use Laddermap in the construction of the HVM in order to reduce possibilities of doubts regarding the ideal cut-off level, since the software provides a series of alternatives to define the cut-off level, leaving aside the elaboration of a summary table that represents direct and indirect relations among elements; and
- to conduct a bibliographical research before the laddering technique: the literature review can lead to the identification of products' basic characteristics, foreseeing some attributes.

Laddering could be expanded for areas that, even without tradition in its use, are concerned with discovering hidden meanings behind actions. The technique could be either employed as a whole, by following steps that range from data collection to analysis stages, or partially by applying the laddering interview to disclose what something signifies or indicates for an individual. The technique itself could be even more developed. Future researches should examine the possibility to study laddering not as one-on-one interviewing technique, but using groups of people in the data collection step, comparing, for instance, the traditional laddering and a kind of laddering that use a focus group structure in the data collection phase.

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Author Note

Tânia Veludo-de-Oliveira is a PhD student at Cardiff University and her studies are support by CAPES – Brazilian Ministry of Education Agency for Graduate Studies. She received the Master Degree from School of Economics, Business Administration and Accounting of University of São Paulo – FEA/USP (São Paulo, Brazil). Tânia Veludo-de-Oliveira, Cardiff Business School (CARBS) and School of Economics, Business Administration, and Accounting, University of São Paulo (FEA/USP), Rua Dr. Vasco de Andrade, 94. apto. 201. CEP: 38017-200. Uberaba – MG. BRAZIL; Telephone: 55 11 3312 9965; Fax number: 55 11 3312 9965; email: tveludo@usp.br

Ana Ikeda is an Associate Professor and the Professor of Marketing at School of Economics, Business Administration and Accounting of University of São Paulo – FEA/USP (São Paulo, Brazil). She specializes in marketing research and has published numerous marketing articles in academic journals and proceedings. Ana Ikeda, School of Economics, Business Administration and Accounting, University of São Paulo (FEA/USP), Av. Prof. Luciano Gualberto, 908 sala E-104. CEP: 05508–900 – São Paulo. BRAZIL; Telephone: 55 11 3091 5879; Fax number: 55 11 3818 4038; email: anaikeda@usp.br

Marcos Cortez Campomar is a Full Professor at School of Economics, Business Administration and Accounting of University of São Paulo (FEA/USP) and teaches marketing in undergraduate and graduate courses. Marcos Cortez Campomar, School of Economics, Business Administration and Accounting, University of São Paulo (FEA/USP), Av. Prof. Luciano Gualberto, 908 sala E-104. CEP: 05508–900 – São Paulo. BRAZIL; Telephone: 55 11 3091 5879; Fax number: 55 11 38184038; email: campomar@usp.br

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