



Original citation:

Wakenshaw, Susan Y. L. and Ma, Xiao (2015) Social representations of value : an empirical investigation. Working Paper. Coventry: Warwick Manufacturing Group. WMG service systems research group working paper series (Number 09/15).

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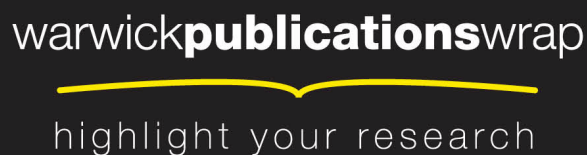
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**Social Representations of Value:
An Empirical Investigation**

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- Service Design
- Value and Business Models
- Visualisation
- Viable Service Systems and Transformation

WMG Service Systems Research Group Working Paper Series

Issue number: 09/15

ISSN: 2049-4297

July 2015

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If you wish to cite this paper, please use the following reference:

Wakenshaw S & Ma X (2015) T Social Representations of Value: An Empirical Investigation. *WMG Service Systems Research Group Working Paper Series*, paper number 09/15, ISSN 2049-4297.

Social Representations Of Value: An Empirical Investigation

Abstract

The importance of value and value creation for the success of business activity has been increasingly recognised theoretically and practically. The concept of value has been defined on the basis of various foundations and from different perspectives. Despite the extant conceptualisations of value in business literature, social representations of value (i.e. common sense knowledge about value) are yet to be fully understood. Thus, this paper investigated these social representations as well as the relationship between extant representations of value by employing the structural social representation theory and its related methodology strategy as proposed by Doise et al (1993), as well as the ontology engineering method (Ma, et al, 2014).

The analysis revealed that economy-based concepts constitute the core elements of value representation in the overall value network, while exchange- and experience-based concepts form the sub-networks (clusters) for value. Exchange-centricity, with economy-based concepts as its foundation, is the dominant representation of value, while experience-centred concepts constitute the peripheral elements in the overall network of value. Despite the different positions of these sub-networks (clusters) of value in the value network, they share common core elements, i.e. economy-related concepts. It can be suggested that creating worth for firms is still the dominant representation of value that is shared in the public sphere and well-documented in business literature. In terms of the extant representations of value in business literature, the exchange-based notion of value (Goods-Dominant Logic) is more representative than the experienced-based notion of value (Service-Dominant Logic) for its common understanding in the public sphere. Service-Dominant Logic as proposed in the business community is an accepted concept, although still from a peripheral position. Theoretical and practical implications of these findings are discussed.

1. Introduction

Value is one of the foundational concepts in business literature, while value creation is viewed as the central purpose of economic activity. The significance of value (co-) creation for the success of business activity is increasingly being recognised by both academics and practitioners. Conceptualisations of value are based on various theoretical foundations (see a review, Ng and Smith, 2012). Due to the diversity of value definitions, there is a need to enhance understanding and communication

between researchers of value and service. Thus, a number of scholars (Baines et al., 2009; Maglio, Srinivasan, Kreulen, & Spohrer, 2006; Ostrom et al., 2010; Vargo, Maglio, & Akaka, 2008) have called for action in research on vocabularies, conceptual abstractions, relationship among concepts and analytical modelling to describe and represent value and value creation. The argument is that it is deemed necessary to establish ontological foundations for service (Drăgoicea et al., 2014) and value (Fragidis & Tarabanis, 2011).

Definitions of value can be divided into two approaches; Goods Dominant-Logic (GDL) and Service- Dominant Logic (SDL) (Vargo and Lusch, 2004). GDL has been acknowledged and accepted as the dominant approach for value in the business community. However, SDL and the notion of value co-creation have been recognised and are increasingly accepted as an emergent discourse of value in the service domain. Despite extensive literature and debate on representations of value, we stress that two issues need to be urgently addressed: (1) the social representations of value (the shared common knowledge) in the public sphere, and (2) the relationships between extant representations of value in business literature. If conceptualisations of value are its representations held by different groups (academic and practitioner), insights into these issues could potentially enhance value co-creation in society, by improving communication between different groups in the business community and in society as a whole.

In this context, this paper empirically investigated (1) social representations of value and (2) relationships between extant representations of value in business literature. In order to achieve this, we employed a structural social representation theory. We also applied the methodology strategy proposed by Doise et al (1993), and in order to operationalise the strategy, an ontology engineering method (Ma et al, 2014) was also used.

By searching knowledge bases with “value” as the input concept, we identified a list of concepts that are semantically associated with “value”. Taking into account business literature on value and concepts as identified from the knowledge bases, we distinguished the shared reference points for constructing value networks. Using these as seeding concepts, we developed networks for the concept of value through three experiments (Exp1, Exp2 and Exp3). Network analysis revealed that in the overall network, economy-based concepts constitute the core elements for the social representation of value, while exchange- and experience-based concepts associated with value form the sub-networks (clusters). One cluster of concepts (exchange-centric with economy-based concepts as its foundation, GDL for value) is more representative than another cluster (experience-based, SDL for value). Hence, SDL could be viewed as the peripheral element in the overall network. Despite the

different positions of SDL and GDL in the value network, they share common core elements, i.e. economy-based concepts. Thus, it can be suggested that creating worth for firms is still the dominant representation of value that is shared in the public sphere and well-documented in business literature.

The study's contributions can be described as follows. *Theoretically*, the findings would contribute to our understanding of value in terms of (1) common knowledge of value, and (2) representativeness of the extant representations of value and the relationships between them. Therefore, our research aims to fill the gaps in the literature. *Methodologically*, this research contributes to the methods of conducting research from a structural social representation approach. An ontological engineering method enables us to implement a methodology strategy proposed in social representation theory. Consequently, this method would enable us to investigate social representations of social objects/constructs in business literature in a systematic manner. *Practically*, an understanding of common, shared knowledge of a social construct such as value would enhance firms' ability to communicate with the public more effectively.

This paper is structured as follows. First, we describe the structural social representation theory employed in our research. Second, we discuss the methodology strategy and the method used for our empirical work. Then, the findings are presented. Last, we further discuss these findings and their theoretical and practical implications.

2. Theoretical background: Social representation theory (SRT)

Based on a structural approach to social representation theory, Abric (2001) described all reality as being represented and appropriated, reconstructed in the cognitive system, and integrated in the value system by the individual/group (Abric, 2001, p.42). Thus, reality is knowledge-constructed in the form of social concepts/objects/constructs, which are "socially elaborated and shared [...] for the construction of common reality" (Jodelet, 1989, p.36; Abric, 2001, p.43). Social representations entail two functions: (1) "to establish an order that will enable individuals to orient themselves in their material and social world, and (2) to make communications possible by providing them with a code for social exchange" (Radu and Redien-Collot, 2008, p.300). It can be suggested that social objects/constructs are articulated between individuals and the group, and between the individual and the use of these constructs. These social constructs would enable individuals and the group to "...communicate their intentions, negotiating and coordinating their actions" (Lahlou, 2001, p.134) (cognitive system). In addition, social constructs also contain "a dialectical relationship between representations and practice" because of

their “descriptive and normative functions” of “telling individuals how things are...how things should be and how individuals should behave in order to be consistent with general values, norms, and social expectations” (Radu and Redien-Collot, 2008, p.260) (value system).

Social representations, i.e., common sense knowledge about abstract objects or theories (Clemence, 2001, p.83) could be constructed and formed by (1) discussion in the public sphere, and (2) knowledge exchanged and shared in the groups we are involved with (Clemence, 2001). It can be suggested that people would take their own positions by referring to common points of reference (Clemence, 2001). Social representation theory could potentially enable us to describe positions, and social groups taking these positions in the social construct network.

As one of the foundational constructs in business literature, value has been conceptualised from different perspectives. For example, GDL deems value as an essence (such as attribute/property) embedded in offerings inherently valuable for consumers to solve their problems. These properties can be evaluated/assessed by consumers in terms of their goals/purposes. In this process, economic value in a monetary form can be estimated and generated in the exchange between the firm and the customer. Thus, worth can be created for the firm. This notion of value can be traced back to Adam Smith (1904 [1776]). However, for SDL, offerings could only be potentially valuable, and the value of an offering could only be created in the context of the customer’s interactive experiences with the offering in the process of achieving his/her values (Holbrook, 1999). Values are not deemed as something that exist in consumers’ minds but rather, as something social constituting the systems of beliefs, ideas and practices at micro, mezzo and macro levels (Vargo and Lusch, 2004). Despite their differences, for both approaches, value of an offering entails cognitive and intentional perceptions derived by the customer from his/her evaluations of either functions/properties/attributes of the offerings (GDL) or his/her own experiences (experiential properties) (SDL) in his/her consumption practices for fulfilling his/her goals/purposes. Value is a foundational construct for exchange from both GDL and SDL perspectives. GDL and SDL centre on economic exchange and service exchange respectively (Vargo and Lusch, 2004).

The extant conceptualisations of value can be referred to as representations of value. These representations entail knowledge of value shared by distinct groups (including academics and practitioners) in the business community. It can be suggested that people take positions and form groups by accepting different representations. Despite the fact that representations of value are shared and accepted by different groups in the business community, representations of value (in business sense) for society as a whole (social representations of value) has yet to be

investigated. Social representations entail articulations in terms of how individuals in a group construct the social object (concept/construct) and how the individual uses the social construct (Lahlou, 2001).

When we talk about a social representation of something (say "X") by a group, we point at the mediating structure for coordinating action between group members for constructing and/or coping with "X" (p.134).

It can be suggested that social representations of value can enhance communication and collaboration between individual consumers and firms, and they function as connections between individual cognition and social practice in terms of value and value creation. Thus, insights into social representations of value can enhance our understanding of value in the (social) cognitive system, value system (norms) and practice /activity system (1) for society as a whole and (2) for social groups. This understanding is crucial for value (co)-creation. Social representation of value could mediate (1) between the individual and group in a shared understanding of value (cognition) and (2) between the individual and their use of the concept of value in decision-making in their daily lives.

Social representation theory would provide us with a framework to capture (1) the cognitive, normative (structure) and descriptive (practice) aspects of a common shared knowledge of value. By taking a structural approach to social representation theory, in this paper we focus more on the normative aspect of value.

According to social representation theory, "common sense and scientific thinking are interconnected" (Clemence, 2001). With increased access to a variety of scientific knowledge, development of common sense is based more on it. Instead of replacing common sense, diffusion of scientific knowledge is a process of transformation and formation of common sense (Clemence, 2001). "*Social representations are the result of a perceptive and cognitive construction of reality, which transforms social objects (people, contexts, situations into symbolic categories (values, beliefs, ideologies) therefore providing a collective significant system for the regulation of cognitions and actions*" (Ljunggren and Alsos, 2001) (Radu and Redien-Collot, 2008, p.259). Social representation theory would potentially enable us to understand how the representations of value in scientific thinking have diffused and been transformed to form the common sense of value in the public sphere.

Abric (2001) proposed a structure of social representation, which consists of a central/structuring core and peripheral elements. The central core is the 'unifying and stabilising element of the representation' (p.44) that could enable other constitutive elements to acquire a meaning (the signification) and determine the nature of the links that unite the elements. The central core can be conceptualised not only in quantitative terms but also in a qualitative dimension. Its centrality is its

ability to give significance to the representation (p.44). The central core can be associated with a large number of constituents of the representation (p.46). The central core is determined by (1) the nature of the object represented, (2) the type of relations that the group maintains with this object, and (3) by the system of values and social norms that constitutes the ideological environment of the moment and group (p.43). The core elements include the most accessible, concrete elements, which constitute the essence of the representation's context (p.44). The peripheral elements constitute the interface between the central core and the concrete situation, which the representation realises itself. These elements are important for adapting the representation to the contexts through integrating the new information and transforming the environment (p.44). The structure of social representation would enable the operationalisation of the meaning system. Social representation theory would enable us to develop a structure of the system of value through identifying the central core and peripheral elements and the organising principles of value, as well as also capture the dynamics and changes of the structure of the meaning system of value.

Theoretically, social representation theory would enable us to gain insights into many aspects of value as discussed above. In our study, we focus on the following issues: (1) identify the central core for the social representation of value; and (2) investigate the representativeness of representations of value and the relationships between various representations of value in business literature.

3. Methodology and Method

Doise et al (1993) proposed a methodology strategy for conducting structural social representation research. This strategy includes: (1) mapping shared reference points and developing a network or map of meanings for the social construct; (2) identifying organising principles and social positions of the clusters of concepts (sub-networks) in the network; and (3) linking positions, principles and individuals/groups in the network. In our study, an ontology engineering method (Ma, et al, 2014) was used to operationalise this methodology strategy based on the following rationale. First, the purpose of ontologies is to provide a shared understanding of a given domain of interest (McGuinness, 2003). Neches et al. defined ontologies as "the basic terms and relations comprising the vocabulary of a topic area." (1991, p. 40). Ontology therefore can be considered as social representation that denotes a shared interpretation of a part of the world (Borst, 1997), by capturing and providing consensual knowledge that is accepted by, or derived from, a group (Fensel, 2000) or a given society. Second, the ontological engineering method was built upon the foundation of the SENSUS methodology (Swartout, et al, 1997), which requires that a concept's definition or description contain a small but highly relevant set of

propositional terms in a semantically-connected network. The network with its nodes and the internal relationships among them further provide reasoning mechanisms to identify positions of shared references, and to inspect the linking positions and principles between individuals/groups. In essence, this method shares the principles of social representation theory and Doise et al (1993)'s methodology.

Our ontology engineering method involves (1) identifying seeding concepts, which are similar to the shared reference points described in Doise et al (1993)'s strategy. In this paper, we use these two terms interchangeably because seeding concepts make more sense in the ontology domain while shared reference points are more accepted in the social representation domain. The ontology engineering method also involves (2) mapping a larger structured set of texts/concepts (corpus) around shared reference points, and (3) identifying the internal connections among these concepts for further structural analysis.

This approach is illustrated below:



3.1 Identifying shared reference points for social construct

The identification of shared reference points is normally achieved through qualitative research methods such as word associations and/or interviews. In our study, we first explored words associated with value. The concept of value was linked to online knowledge bases through a semantic search engine (OneLook www.onelook.com), which indexes over 1000 sources such as definition entries, dictionary websites, Wikipedia and Wiktionary. The linkages were obtained through the Reverse Dictionary tool provided by the search engine to produce a list of words, phrases and abbreviations that are related to the input concept. A total of 100 words/concepts associated with value were identified in the online knowledge base (see Appendix one). Two categories related to our research were derived. The first category (related to economy and exchange) includes such words as *worth, economic value, book value, gross national product, capital stock, capitalisation, appreciate, depreciate, float, depress, goodwill, asset, account, measure, assess, price, cost, sell, charge, market value, face value, monetary, cheap, premium, evaluate, rate, token etc.* The second category (related to experiential properties of the individual experiences of using the offering for achieving life projects, goals and/or for the fulfilment of morals and ethics) includes *values, meaning, expectation, esteem, respect, trumpery, prize, respect, honour, excellence, appreciate, apprise etc.* Second, we conducted an extensive literature review on value and compared this

with the two categories and their concepts of value. We then proposed four groups of highly abstractive concepts from each perspective as the shared reference points: economy-exchange-based (*value, worth, price and cost*); experience-based (*value, values, meaning and experience*) centring on meanings and achieving life goals; and experience-based (*value, esteem, appreciate and apprise*) focusing on the fulfilment of morals and ethics.

3.2. Developing networks/ map of meanings for the social construct

In order to develop a network for value, shared reference points were used as seeding concepts and were linked to online knowledge bases through a semantic search engine (OneLook www.onelook.com). A list of words, phrases and abbreviations related to the reference points were produced. However, the search queries can only return a small number of terms that were too few to represent the corresponding domain or to yield any statistically relevant results. In order to generate more relevant words for the input concepts in the domain, the terms produced through search queries were applied as seeding concepts again to obtain more related concepts. Such an approach known as “snowballing sampling” is common in social studies and statistics, especially within social network analysis (Salganik, 2003). It is suggested that the same approach can be used to generate a large collection of related data to construct complex social networks (Carrington, Scott, & Wasserman, 2005). It is capable of producing a statistically meaningful distribution from unclear network structure.

The snowballing mechanism was configured to use paired seeding concepts to derive related concepts. The number of seeding concepts was controlled at four concepts per experiment, to avoid the related concepts being misled towards unpredictable directions by the seeding concepts. Early experiments for testing the quantity and quality of related concepts showed that paired keywords generated better results than other options. Paired seeding concepts produce more domain-focused related concepts compared to using a single concept, and they also derive more concepts than using multiple concepts (as multiple concepts severely limit the number of the related concepts). Paired seeding words seemed particularly beneficial for the domain description density for both less-focused and more naturally-focused domains.

However, despite the advantages of using paired seeding concepts, a seeding pair had a high risk of misleading the related concepts to an unpredictable domain, particularly if the pair was wrongly identified via literature review. To avoid such a scenario, further experiments were conducted to identify the minimum number of seeding word pairs required to provide reasonable fault tolerance. The results showed that two pairs of keywords appear to be the minimum requirement. However, two pairs of seeding words may produce predictions around two subject

areas, and subsequently cause the corpus to lose its yield to target any particular domain. Therefore, this work suggested two completely different pairs (4 concepts), and applied all possible combinations (6 combinations) to better tolerate poor seeding concept choices.

In order to develop the network of meanings of the construct, we needed to conduct experiments to formulate the corpus for the concept. In our study, three experiments were conducted to formulate the corpus for exchange-based and experience-oriented value ontologies (referred as Exp1, Exp2 and Exp3 hereafter).

Exp1: we used terms that are relevant to value in economics and exchange: **value, worth, price and cost** as the seeding words.

Exp2: we used terms that are relevant to value in experience: **value, values, meaning and experience.**

Exp3: we used terms that are relevant to value in experience: **value, esteem, appreciate, and apprise.**

3.3. Identifying organising principles and social positions of concepts

The network construction not only generated a group of connected concepts, but also yielded the frequency of occurrence data for these terms (statistical data was created). To better understand the network, social network analysis methods were adopted to facilitate the ontological analysis. These methods include centrality, closeness and betweenness analysis. In the network, statistical differences between concepts would indicate their positions of these concepts' positions and the organising mechanisms in the network.

Conceptual Centrality

We constructed the value networks by using shared reference points and the snowballing method. It was similar to asking a group of friends to share their phonebook contacts – certain contacts may be more popular (higher appearance in more phonebooks) than others. The construction process involved “asking” all concepts to share their “contacts”, and certain contacts may be mentioned more times than others. For example, in the Exp1 network, charge was mentioned 1228 times by other members in the network, value was mentioned 889 times, and meaning was mentioned only once. Thus, charge has high centrality compared to meaning.

Technically, centrality analysis focus on *measuring the total number of connections a concept may have in the entire network*. Centrality analysis would identify the highly connected concepts in the network. A member of the network with high centrality

may also be considered as a super connector, as it has direct (or short routed) connections to other members of the group. It is assumed that in the network, those concepts that had been “derived” (nominated by others) more times than others could be regarded as more representative, or more “centrally” located. Thus, centrality analysis would generate representative concepts (super connectors) from groups of concepts (social network members) within the network (Katz, 1953). Centrality would be an indicator of the degree of the concept’s representativeness for the social construct in the network. Centrality analysis would enable us to identify the key concepts to define the network’s social construct.

If a concept only has the centrality measure of 1 after the snowball sampling, this indicates that the concept is loosely connected with only one other concept. Hence, its appearance in the network may be considered random, and can be regarded as “noise”.

Closeness and Conceptual Clustering

Closeness analysis would enable us to depict the conceptual clusters around the centralised concepts, which would provide a more comprehensive description of these concepts and clarify the relationships among them. *Closeness analysis centres on the proportion of connections to a concept from another concept.* It is assumed that in the network of derived concepts, certain concepts are more “closely” related than the others. This relevant power can indicate the “closeness” between concepts. For instance in the Exp1 network, value was nominated 889 times by fellow members. Among the 889 nominations, appraise originated 51 times, and prize contributed 24 times. As a result, this research considers that appraise possessed more than twice the high closeness measure towards value (51/889) compared with prize to value (24/889). Closeness analysis further reveal how key/core concepts could have various derivative power towards their neighbouring concepts and give meanings to them.

Betweenness

Betweenness analysis would enable us to understand relationships between concepts in the network with low closeness. These (sub)networks (concept clusters) comprised of those members with a low closeness, i.e. which were semantically further apart than others.

For example, it was observed that valuable did not imply value (closeness = 0) in the GDL network. However, valuable was relatively (comparing with members in the treasure conceptual cluster) close to treasure, and treasure was relatively close to value. In this case, this research considers that treasure created the betweenness and brokered the conceptual cluster of valuable and value. First, “betweenness” analysis could assist in identifying the bridging elements that connect members in the domain /sub-network through uncovering the overall structure of the network.

This analysis would identify those members whose importance may be missed by centrality and closeness analyses, but may bridge the gaps between concept clusters. Second, betweenness analysis would reveal the relationships between individual concepts or groups of concepts through identifying the concurrent members with overlapping concepts. In this research, special attention was paid to those members that were remotely positioned in both directions.

Centrality Distribution

These three analyses could be achieved by mapping the centrality distribution change through centrality calculation. With the calculation of the distribution, a 'Tri-sectional trend of centrality of distribution' could be produced, which clearly mapped the three zones of 'definition zone, 'description zone' and 'connection zone' (see Figure 1).

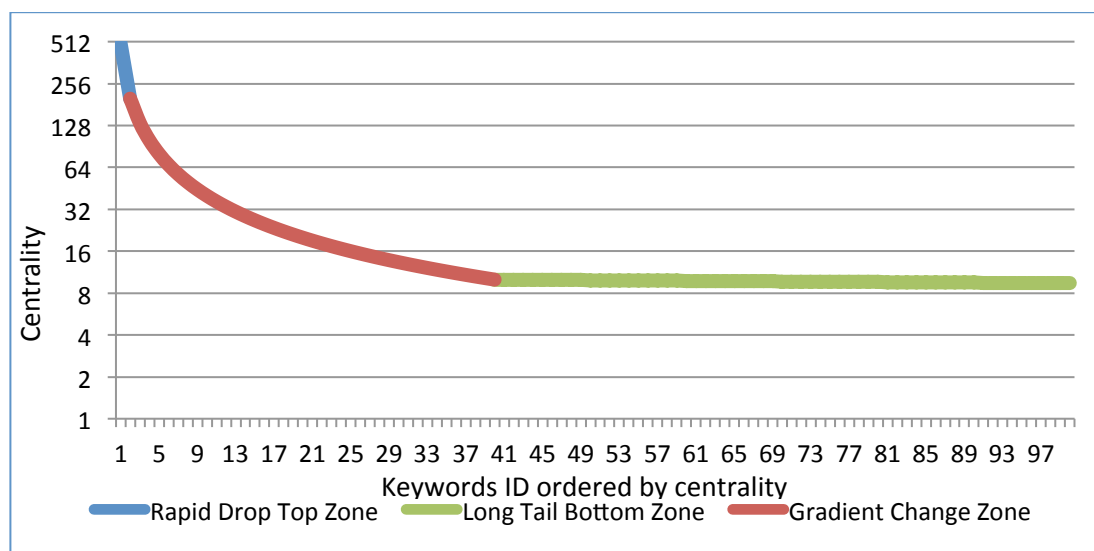


Figure1: Tri-sectional trend of centrality distribution

This distribution is similar to a Poisson distribution in probability theory and statistics, which presents the probability of a number of events occurring in a fixed period of time if these events occur (Figure 2).

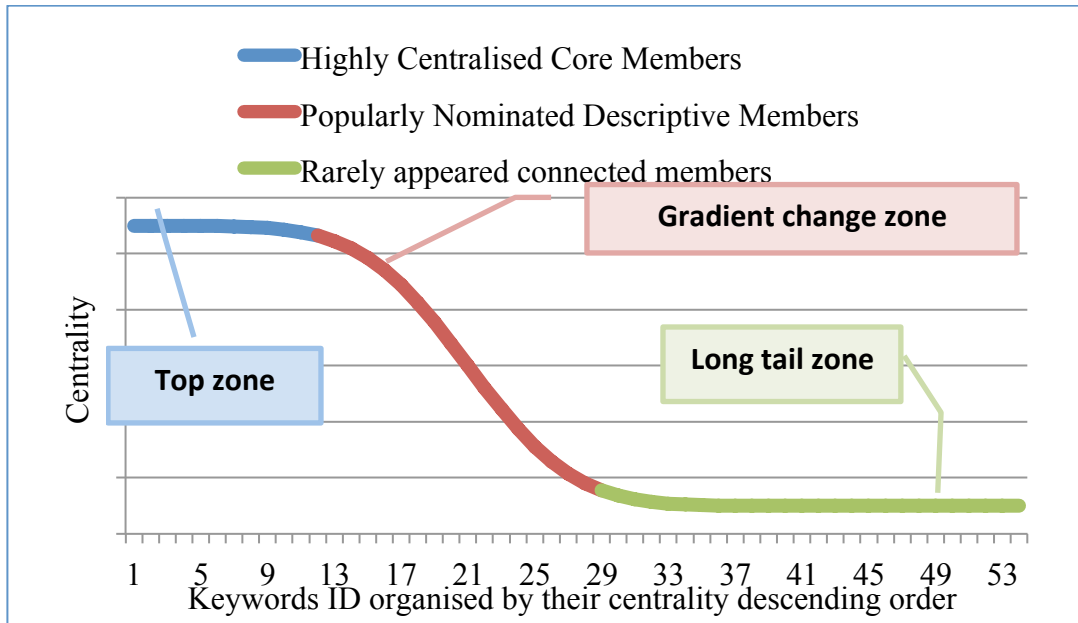


Figure 2: Illustration of Poisson distribution

In such types of distribution, three distinguishing zones can be observed:

1. *A fully-connected top zone with dozens of highly centralised members.* The top zone was filled with highly centralised top-level concepts, which were the most popular “referred” (as a prediction) by the fellow concepts. These words are the keywords that define the domain. Mathematically, these keywords appeared much more often than the other members outside the zone. We name this the “definition zone”.
2. *A partially-connected gradient change zone with few hundreds of highly (but not fully) connected members.* Their centralities were much lower than the top zone, but most of them were connected to top zone members. The gradient change zone consisted of popular supporting concepts or instances that described the top zone members. They complemented the top-level conceptual clusters. Terms in this level were closely related to the top-level members but were not as important in terms of domain representation. Further observation reveals that many of these members were phrases containing words in the definition zone or their thesaurus, which made them more like descriptions than definitions. Therefore, we named this the “description zone” in this research.
3. *A long tail zone made up of thousands of low centralised members, most of which had centrality of one (indicating they were mentioned only once in the whole network).* The long tail zone contained keywords mentioned by the members in the top two levels. Members at this ground level did not necessarily describe the concept accurately, but they were connected to the top two levels more or less in a context, which may or may not be associated with the target domain. This

may benefit the research in boundary analysis and these terms may bridge relationships with other domains. We named this the “connection zone”.

Describing these three zones is crucial to explain the representation of the social construct. The concepts located in the definition zone are the core elements for the representation, while those located in the description zone can be used to describe how core elements give meanings/appropriation to the network and identify its organising principles. And as the bridging elements between the core and other domains/sub-networks, the concepts located in the connection zone would enable us to identify the peripheral elements.

4. Findings

4.1 Theme 1: Representativeness of representations of value

Network analysis reveals that an economy-exchange-based network produced a greater number of concepts that can collectively define value in the overall network. Hence, more representations have been identified in the economy-exchange-based value network.

Exp1 (initiated by value, worth, price, cost) generated 4,098 concepts with 44,457 binary relationships, while the network density was 10.85. This indicates that the seeding concepts for Exp1 were more than doubly focused on its target domain because of the higher value of connections each concept could have compared to Exp2. This was also signified by the highest centrality in the network; 1,128 for the concept charge (connected with 1,128 other concepts).

In contrast, Exp2 (**initiated by value, meanings, values, experience**) constructed a corpus containing 2,799 concepts with 13,865 binary relationships among them. The network density (average relationship per concept) was slightly over 4.95, which means that each concept was connected to slightly less than five other concepts. The most centralised concepts in the network were value and rate, with a centrality of 376 (connected with 376 other concepts) and 305 respectively. The lower number of relationship per concept that Exp2 developed may indicate a less focused or even multiple focal domains/sub-networks. From a network analysis perspective, seeding words and related concepts in Exp2 were not commonly associated with each other when value was discussed. From a social representation perspective, it can be suggested that the proposed shared reference points for experience-based value were not the appropriate representatives for the concept of value.

Due to the low centrality of the Exp2 corpus, we needed to reconsider the shared reference points we had identified for Exp2. We had to return and reflect on the value literature. Experience-based value definition (Lusch and Vargo, 2004; Holbrook, 1999) centres on the fulfilment of values, which refers to social norms and

rules, beliefs, and attitudes in consumption practice/experiences in their daily lives. This notion of value is influenced by existentialist thinkers such as Nietzsche, Heidegger, Dreyfus etc, in modern era, who suggest that individuals turn to private experiences that give meanings and significance to his/her lived lives (Dreyfus 1993; Heelas 1996; Berger, Berger and Kellner 1974) in a totality of things, individual and other people. Based on this thinking, we chose “**value, values, meaning and experience**” as the shared reference points for Exp2.

However, social norms and beliefs could entail external standards or rules such as morals and ethics for individual behaviour and internal meanings for personal life projects. These external and internal divisions of beliefs for guiding individual conducts and activities have been rigorously debated in philosophy and sociology for centuries. Both Vargo and Lusch (2004) and Holbrook (1999) did not specify these two types of beliefs. The word associations for value that we identified in the online Knowledge base showed that many words associated with value such as regard, respect, honour etc indicate representation for value and values, which emphasise that people find meanings by turning to external standards such as morals, ethics etc. Achieving these morals and ethics can bring about esteem, and individuals would appreciate the value of offerings in terms of their performance in fulfilling these morals and ethics. This notion of value can be traced back to Plato. Therefore, we choose the shared reference points of “**value, esteem, appreciate and apprise**’ and use them as seeding words in Exp3.

Exp3 (initiated by **value, esteem, appreciate and apprise**) constructed a corpus containing 2,923 concepts with 19,820 binary relationships among them. The network density was 6.78, which means each concept was connected to more than six other concepts. The most centralised concept in the network was value, with a centrality of 575 (connected with 575 other concepts). Other concepts with relatively higher centrality were esteem, rate, respect, regard, and honour with a centrality of 414, 367, 362, 321 and 285 respectively. In comparison with Exp2, a greater number of concepts connected with the seeding concepts, indicating that Exp3 seeding words and their related concepts were much more used when people discuss the concept of value; they were connected to more concepts in the group. These concepts can be more representative of experience-based value even though they are not the core concepts for the value network for society as a whole.

The representativeness of the economy-exchange-based approach to value can be increased/signified when ‘noise’ is removed from these networks. Noise in the experiments is characterised by concepts with only one connection to the rest of the network. Exp1 revealed that 1668 valid concepts shared 35,630 relationships, which led to even better connectivity as network density was raised to 21.36. In comparison, when noise was removed from the network for Exp2, it had a network

density of 8.08 via its 859 concepts and the 6,937 relationships established among them. While Exp3 had a network density of 12.10 via its 1,091 concepts and their 13,197 relationships when noise was removed from its network. Comparing Exp3 with Exp2, the greater number of concepts in Exp3 shows that its seeding words and their related concepts were more relevant when people discussed their experiences in terms of value. In comparison with Exp3 and Exp2, a much greater number of concepts in Exp1 indicated that its seeding words and their related concepts were much more widely used in discussions of the concept of value, as they were connected to more concepts.

Furthermore, the domain focus of Exp1 is better than Exp2 and Exp3 in two ways: firstly, the valid proportion (non-noise) of concepts in Exp1 was 40.70%, while the same measurement for Exp2 and Exp3 were at lower levels of 30.69% and 37.33% respectively. Secondly, the proportion of binary relationships that actually contributed to the valid concepts were over 80% (80.15%) in Exp1's network, while a sharp drop was observed in Exp2 and Exp3's networks at 50.03% and 66.58% respectively. This further reflected that exchange-oriented social representatives of value were more commonly referred to as descriptive or related concepts to each other.

The above quantitative analysis demonstrated that economy-exchange-based value is more representative than experience-based value in the overall network. Qualitatively, the core concepts in these networks also define other concepts in their respective networks. Table 1 reveals how description zone members are determined by the core concepts in the network. We could also demonstrate how the core concepts in the top zone would define the concepts in the description zone. The right half of the table lists all description zone members as Target Concepts, with Target Concept's centrality (C, the number of concepts), and its Zone category "Desc", indicating all members that fall into the description zone. The left half reveals how each description zone members are represented by their root concept, the centrality of the root concept and its zone category. A special calculation (column "Core?") is added onto those root members, to trace back to their very roots if they were not top zone members.

Table 1 demonstrates that 75% of all description zone members' connections are from top zone core members. Even in the cases where a description zone member may be strongly referred by its fellow description zone members, such members may be tracked back to the core members in the top zone. For example, discount was referred by a few description zone members: consideration, sell and par value, which in turn were determined by their root core concepts such as esteem, respect, regards, account, book value, price and value.

Due to the high centrality of Exp1 compared to Exp2 and Exp3, there are more economic-exchange-based concepts in the top zone that would define and derive more concepts in the descriptive zone. We can thus argue that the core elements give meanings to the descriptive zone and define the value network qualitatively.

Therefore, we draw our first conclusion from the network analysis perspective that **an economic-exchange-based approach to value is more representative for value than an experience-based approach.**

(Please see Appendix 2 for all the statistics described above).

4.2 Theme 2: Relationships between representations of value

By using the centrality calculation, we would be able to produce distribution of the centrality changes. A trisection-division mechanism made the overall centrality a means of representing the nature of domain concepts variation. The representatives of the domain can be divided into definition zone, description zone and connection zone, depending on different levels of the concepts' representativeness. From an ontologyengineering viewpoint, this was a process of identifying core concepts that define the social construct/object and group members based on their conceptual relatedness (see the detailed discussion in section 3).

The top zone showed a smaller number of concepts in each network, which may collectively represent (define) network through their highly centralised position and wide connectives towards other concepts. The analysis suggested 144 such concepts for Exp 1 network, with 71 and 86 for Exp 2 and Exp3 respectively. Statistically, economy exchange-based concepts are more representative for the Exp1 network since they form a higher percentage (3.51%) of all concepts compared to the proportion for experience-based concepts (2.64% for Exp2 and 2.94% for Exp3). Top zone members in the Exp1 network were also more tightly connected with each other (network density of 212.99 for Exp1 definition zone network, 159.73 for Exp2 and 195.67 for Exp3).

A comparison among definition zone concepts has been drawn below to provide insights into the differentiation among such networks in further detail. Appendix 3 lists definition zone members (highly centralised concepts) in all networks in a descending order according to their centrality, accompanied by their corresponding centrality ranking in the other networks. Depending on its centrality ranking in the different zones of other networks – definition zone, description zone, and connection zone – each target concept's ranking position in the other networks is marked as Green, Yellow or Red. If a target concept may not be found in another network, its corresponding centrality ranking is displayed as "#N/A" with a white

background. This illustration was applied to economy-exchange-based value concepts against the two experience-based networks; and target concepts in the two experience-based networks' definition zone members were also tagged against economy-exchange-based network.

It was observed that Exp1 has all its seeding concepts (**Value, Worth, Price, Cost**) in its top 10 positions. The high representativeness of the seeding concepts in the network reflected the strength of mutual relatedness between concepts within the economy-exchange-based value concept. Exp2 only has two seeding concepts (**value and meaning**) in its top 10 positions. The Exp2 network lost two of its seeding concepts – values and experience – that were from its defining members. In fact, these concepts were ranked so low that their significance was extremely peripheral with their centrality at 2; in other words, only two other concepts considered values as representative in the network, while experience appeared as noise with a centrality of 1 and was not even included in the valid network. A possible reason for the low centralities was that they were so remotely related to the value definition in general, that they failed to influence the nature of the network, even when serving as seeding concepts. In other words, the concept of value and certain economy-exchange-oriented concepts are much more strongly connected, which subsequently result the experience-oriented network towards the exchange-oriented direction – concepts become identical, and centralised on a similar group of concepts. For experience-oriented network, the concepts of value, rate, worth, and price are considered overlapping concepts with exchange-oriented network.

A clear improvement was detected in the Exp3 network. Not only did its seeding concepts (**value, esteem, appreciate, appraise**) appear as definition zone members, but the concepts of value and esteem were among the network's top 10 positions. The overlapping concepts for Exp3 and Exp1 are value, rate, worth, price and estimate among the top 10 positions. This may explain the phenomena of highly-centralised experience-based concepts also appearing to be definition zone members for the economy-exchange-based value network. For example, 18 out of the top 20 centralised concepts in Exp3 also contributed to defining the Exp1 network; however only 14 out of the top 20 Exp1 concepts appeared as definition zone members of the Exp3 network.

From the above analysis, we can see that the common concepts shared by the three networks initiated by seeding words from Exp1, Exp2 and Exp3 are value, rate, worth and price. The distinctions between these three networks lie in charge and cost in Exp1, meaning in Exp2, and esteem, respect, regard, and honour in Exp3. Among the exchange-based value network definition zone members, 18 were not found in the Exp2 network, and 19 in Exp3. In comparison, only three Exp2 and 10 Exp3 definition zone members were not found in the Exp1 network. The fact that a smaller number

of definition zone members from Exp2 and Exp3 networks were not found in the Exp1 network showed that Exp1 “contained” Exp2 and Exp3 definition zone members, indicating that the economy-exchange-based value network may also represent experience-based value networks.

The categories we developed for the word associations identified in the online knowledge bases are manifested in the representations of value in the different corpus networks. We can now see that the core elements for value representation are economy-based, centring on worth, rate and price. Other domain networks related to this include (1) exchange-based elements focusing on charge and cost; (2) an existentialist approach centring on meanings; and (3) Plato’s notion of value focusing on external criteria of morals and ethics. The representations for these three networks can be associated with shifts of value concepts historically. They are the social representations of value. In the business literature, the notion of value also shifted over time. Exchange-based representation of value has been the dominant representation in business. Vargo and Lusch (2004) depicted the shift in schools of thought, their notions of value and their impact on marketing theory and practice. From 1800-1920, due to influence from classical and neo-classical economics (Marshall, 1890; Smith, 1776), value was viewed as being embedded in goods, i.e. the standard outputs of manufacturing. Wealth was considered as being created through the acquisition of goods (Vargo and Lusch, 2004, p.3). This notion of value can be termed as GDL. Other social representations also started to influence the thoughts and notion of value in business community. For example, SDL as an emergent notion of value centres on value in context, through mutual resource integration and transformation in contexts (service exchange) between consumers and the firm’s offerings. However, for SDL, economic exchange is deemed as the initial stage of service exchange. Thus, it can be suggested that economic exchange is still essential for value and value creation for SDL.

5. Discussion and Implications

We investigated the social representations of value by using a structural social representation theory and its related methodology strategy as well as an ontological engineering method. The analysis revealed that in the overall value network, economy-based concepts constitute the core elements. Exchange- and experience-based concepts form two sub-networks in the network. Economy- and exchange-related concepts form the dominant representation of value, while experience-based concepts represent value in a peripheral position in the network. Despite the different positions however, both exchange- and experience-based sub-networks share the core elements, i.e., the economy-based concepts.

From a social representation perspective, we suggest that an economy-exchange approach is the dominant representation of value in the public sphere. It is in line with business literature in which economy-exchange is accepted as the dominant approach for value. One explanation for an economy-exchange-based representation of value being dominant in both the public sphere and the business community is the diffusion of scientific knowledge and its effects on common-sense knowledge. Also, as firms and practitioners accept such a value representation and employ it in their business practices, it therefore becomes the dominant representation of value at the societal level.

Another finding is that despite being in a peripheral position, experience-based concepts also emerge and form a sub-network in the overall value network. More importantly, experience- and exchange-based concepts share the core elements, i.e. the economy-related concepts. This is also in line with business literature, where some scholars and practitioners have accepted an experience-based representation of value as an emergent value representation. . Due to its marginal position however, its wider acceptance would take time and need more promotion and advocacy on the part of the business community.

It can be suggested that various groups have been formed according to their acceptance of different value representations. It is thus important to enhance the communication and collaboration with and between these groups, to facilitate value creation. In order to communicate and collaborate with these groups, we need to appreciate their understanding of value, i.e. what is their accepted dominant value representation. At the same time, it is necessary to find the 'betweeners' or direct connections between the different representations if we are to enhance communication and collaboration between the groups who hold various value representations.

Another finding is that experience-based value representation centres on external beliefs, norms, and ethics as the values that people strive to fulfill. This is the notion of values held by some moralist thinkers such as Plato etc. However, the notion of values suggested by the existentialist thinkers is not as dominant as that of the moralist thinkers. If we need to communicate with those in the experience-based sub-group, it is therefore key to understand their notion of value and values.

The findings of our research reveals that extant representations of value in business literature such as GDL and SDL are also representations of value in the public sphere. GDL is acknowledged as the dominant approach/representation of value while SDL is regarded as the emerging, new value representation. Our analysis shows that an economy-exchange-based approach to value (GDL) is the dominant representation of value in the overall value network whereas SDL as an experience-based notion of value forms a sub-network in a marginal/peripheral position. Although being in

different positions however, both SDL and GDL share core elements, i.e. economy-based concepts such as worth etc. It can be suggested that even with different philosophical foundations, these two approaches share an economic foundation, i.e. creating worth for firms through the provision of offerings. This opens up the possibility of dialogue between these two different groups in the business community.

Thus, it is suggested that theoretically, this research can contribute to the understanding of the common knowledge of value in the public sphere. We have identified two representations of value corresponding to the value conceptualisations in business literature. This would theoretically enhance value (co) creation between firms and customers, and also improve collaboration between groups.

Methodologically through the employment of an ontological engineering method and social network analysis, we were able to implement the methodology strategy for social representation theory. Information technology/method enabled us to conduct the research from a social representation theory approach in a systematic and quantitative manner with the use of a large scale of database. This quantitative method would provide a complementary approach to data triangulation for extant qualitative methods such as interviews. In business literature, there are many social constructs such as privacy, technology, etc. The method developed in this paper and the approach employed would enable us to investigate the social representations of social constructs in a quantitative and systematic manner. This type of investigation is crucial for enhancing understanding, and to improve communication and collaboration between groups in society and the business community.

5.1 Implications

Differences between various representations of value such as GDL and SDL have been much described and discussed (Vargo and Lusch, 2004). However, is it possible to find ways to enhance communication between these two sub-groups holding different views in the business community. This research constructed a network of terms that collectively define value, and revealed the concepts associated with value and the connections between these concepts. The methodology utilised in this work and the findings demonstrated a feasible route to help clarify the relationships and bridging mechanisms among the terms defining and describing value in both GDL and SDL approaches. These terms formed clusters of concepts/terms as sub-networks in the overall value network (1) representing these two approaches, and (2) quantitatively and qualitatively defining connections between these terms for these two approaches, (3) further indicating their positioning in the overall network.

The construction of social representations of value and positioning of terms associated with these representations provide both approaches with opportunities

to explore paths to communicate more effectively. For example, esteem is a highly representative SDL concept, in particular when co-creation is emphasised. The research finding suggested that instead of linking to terms such as cost or worth in the GDL cluster, esteem is tightly connected with worthy. Hence, a more effective way to make an impression of esteem in the GDL approach is to introduce its connection to worthy, which is a much more accepted representation of esteem than other terms from the GDL domain. In practice, researchers and practitioners who are SDL-oriented can leverage the network to clearly articulate SDL ideas by using terms that are widely accepted in the GDL realm. The key is to identify the connecting concepts between these two representations and their corresponding clusters/subnetwork.

Betweenness analysis would enable us to understand relationships between concepts in the networks with low closeness; concepts that were semantically further apart than others. For example, it was observed that valuable did not imply value (closeness = 0) in the GDL network. However, valuable was relatively (comparing with members in the treasure concept cluster) close to treasure, and treasure was relatively close to value. In this case, this research considers that treasure created the betweenness and brokered the conceptual cluster of valuable and value. First, “betweenness” analysis could assist in identifying the bridging elements that connect members in the domain/sub-network by uncovering the overall structure of the network. This analysis would identify those members whose importance may be missed by centrality and closeness analysis, but who bridge the gaps between concept clusters. Second, betweenness analysis would reveal the relationships between individual concepts or groups of concepts by identifying the concurrent members with overlapping concepts. In this research, special attention was paid to those members that are remotely positioned for the two types of betweenness analysis.

6. Future Research

In this paper, by taking a structural approach to social representation theory, we have focused on the normative aspect of value. We deemed that value as a social construct entails various representations accepted by groups as norms in a society. However, the dynamics of these social representations and the changes in the positions of groups who hold these representations are also worth investigating. This will be one direction for future research. Moreover, in addition to the normative aspect of value, the descriptive aspect of value, which is associated with practice, is also crucial for value creation. Therefore, how the representation of value can be implemented in practice in the public sphere also needs understanding in order to enable firms to co-create value with consumers from a social representation theory. This will be another direction for future research.

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For the Appendix please click on the link:

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