Classification of the Combinatorial Behavior of Verbs in the Marketing Domain

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Abstract. The aim of this article is to provide a description of verbs in the specialized domain of marketing by focusing on their syntactic-semantic behaviors. Using a methodology based on combinatorial properties and paradigmatic relationships, we describe the essential syntagmatic profile of verbs that belong to different verb classes. The hypothesis is that each verb is associated with its particular argument scheme from which it is possible to identify its specialized meaning and establish correlations with a series of predicates with which it shares a set of linguistic properties.

The research was done in the domain of marketing, which is a very dynamic field, also underlined in the definitions, which use terms such as *activity, process, mechanism, adaptation, strategy, techniques*, all designed to satisfy the needs of the customer for the benefit of the company [1].The domination of lexical units describing processes motivated us to explore verbs, as the main words used to express actions, with the help of the Sketch Engine tool, so as to determine their terminological nature and their role in expressing marketing dynamics.

Keywords: Verbs · Syntagmatic profile · Selectional preferences · Specialized French monolingual corpus · Marketing domain

1 Introduction

In the context of language for special purposes, many authors have studied verbs and adjectives as secondary elements in terminology description. Since noun forms are primarily considered as the denominations of concepts, verbs and adjectives are described as part of phraseological information, that is, they are considered of secondary importance in the terminological entry.

We maintain that linguistic knowledge about the syntactic behavior of terms can have an important role for understanding and acquiring knowledge of a specialized domain. From a theoretical point of view, we follow a distributional approach based on the premise that lexicon, syntax, and semantics cannot be separated. If the semantic and syntactic properties of a word are inseparable, the use of a word is defined by the

distribution of its contexts. From this perspective, describing a language means conducting an organized identification of all the uses it contains [3].

In specialized languages that describe a discourse of a certain domain, co-occurrences offer important information for understanding specialized concepts. Corpus methodology has opened the way to analyze selectional preferences which enable us to list typical occurrences of lexical or terminological units. These are called patterns and are defined as "an argument structure with semantic values for the arguments – i.e. semantic types – populated by lexical sets, e.g. paradigmatic sets of words occupying the same syntagmatic position [7, p. 8].

Patterns of usage can be described on the basis of an analysis of actual usage in a corpus. Nevertheless, the Corpus Pattern Analysis (CPA) introduced by Hanks [6] considers that patterns are only indirect evidence for meanings. In order to determine the meaning, it is necessary to summarize the syntagmatic profiles that consist of "various different syntactic and collocational patterns in which the word regularly participates" [5, p. 79].

The lexico-grammatical approach proposed by the French scholars Gross [2, 4] and Le Pesant [8] follows the same point of view that acknowledges the relationship between the meaning of the verb and its syntactic behavior. The authors suggest a methodology that allows classifying lexical units based on the predicate-argument structure. This kind of syntactic-semantic classification applies distributional criteria in order to describe the lexicon by means of two major semantic classes: semantic classes of predicates and semantic classes of arguments. Each of them regroups together units that share common syntactic and semantic features. The advantage of this approach is that it provides a systematic model for representing the interplay between syntactic behavior and semantic features. Apart from making the lexical selection explicit, this model includes syntactic sub-categorization of the predicate and its semantic classification by representing hierarchical relations between classes.

In this paper, we report on the preliminary results of a corpus-based investigation of verb forms in the French monolingual corpus of the marketing domain. The domination of lexical units belonging to the category of processes, in the corpus of the marketing domain, motivated us to explore the verbal predicates and their arguments. We consider that knowledge about verbs is especially important because verbs convey specialized meaning in sentences.

According to the distributional methodology, we carried out an analysis of verbal predicates from the point of view of the semantic types of their arguments. We therefore assumed that each verb had its own particular argument scheme from which it is possible to identify its specialized meaning.

For this reason, the arguments have been listed and grouped in paradigmatic terminological sets in order to be able to determine the verbs' syntagmatic profiles. This kind of analysis allowed us to make links to other predicates that share the same semantic combinatorial features.

2 Methodology

2.1 The Field of Marketing and the Corpus

Marketing is a very dynamic field, its activity concentrating in six main areas, which are the study of markets and consumer behavior, product policy, pricing policy, distribution policy, and communication or promotion policy. The specialized corpus analyzed for the purpose of this research consisted of one million words from three types of texts in the field of marketing written in French: manuals for university marketing courses, scientific and professional articles, and working or management documents prepared for companies by marketing specialists (Table 1).

Table 1. Composition of the French marketing corpus

Text type	Number of texts	Tokens
University textbooks, chapters and theses	18	721,260
Scientific and professional articles	29	226,663
Working or management documents	5	63,498
Total	**52**	**1,007,792**

2.2 The Pilot Phase

The description of a verb's syntagmatic profile involved several complementary steps. First, the key terms of the domain were identified using the frequency list. Afterwards these terms became seed words that were used for direct verb searches. At this point, certain lexical-semantic criteria were used for validating verb candidate terms for the marketing domain.

In the pilot phase of the research, we used three key terms in the marketing domain, the nouns *marché*, *produit* and *prix*, as the starting point for the analysis since nouns are the word class that most typically appear as terms. Furthermore, these three terms belong to three different categories of concepts: market being a **place** where supply meets demand; products being tangible or intangible **goods** offered for consumption, and price being a monetary **value** of goods or services. We used the SketchEngine tool to analyze the distribution of these terms, with special attention given to verbal syntagmatic patterns. A comparison of the word sketches for the three terms showed that the verbs that combine with those nouns as objects are not only more numerous, but terminologically more interesting than those verbs that combine with them as subjects. For example, there were on average 25 verbs cited with those nouns as object against 3 to 6 verbs where the noun is the subject, including modal verbs such as *pouvoir* and *devoir* (Table 2).

A more thorough analysis of the word sketch for the noun *marché,* and the word sketches of the verbs it combines with, showed that among verbs listed with that noun as object, there were many verbs that appeared with *marché* as attributes, in the form of past participles, rather than as predicates, as presented in Table 3. Furthermore, some of

Table 2. Word Sketch for the noun *marché*

	Total number of verbs	Verbs and their frequencies
Verbs with *marché* as object	27	segmenter 43, orienter 18, définir 18, cibler 17, détenir 11, viser 11, élever 12, approcher 9, comprendre 9, servir 8, donner 8, créer 7, saturer 7, élargir 7, découper 6, composer 6, constituer 6, desservir 5, dominer 5, étudier 5, produire 5, connaître 5, pénétrer 4, mondialiser 4, diviser 4
Verbs with *marché* as subject	6	pouvoir 6, cibler 5, exister 4, atteindre 3, connaître 3, consister 3

the listed verbs proved to be synonyms of the terminologically more interesting verbs, e.g. *viser* as a synonym of *cibler* and *découper* as a synonym of *segmenter*.

Table 3. Verbs combining with the noun *marché* and their arguments

Verbs	Frequency	Arguments
segmenter	43	marché 43
		population 2; public 1
cibler	17	clients 12 (client ciblé 6); clientèle 10 (clientèle ciblée 5); population 5 (population ciblée 4); public ciblé 7
		marché 17 (marché ciblé 2); segment 9 (segment ciblé 4); subvention ciblée 7; offre 5 (offre ciblée 4); opération 4; pays/publicité/recherche/communication 3
viser *syn. of* cibler	11	cible visée 30; segment 15 (segment visé 13); marché 11 (marché visé 9); public 6 (public visé 3); clientèle 6 (clientèle visée 3); position 6 (position visée 4); consommateur visé 6; client visé 6; femme/personne 3
servir	8	client 10 (client servi 1); marché (marché servi 4); besoins 4
saturer	7	marché saturé 7
découper *syn. of* segmenter	6	marché 6

Taking into account the findings of the pilot phase, that is, the fact that terminologically interesting verbs more frequently appear with terms as objects and that many listed verbs actually behave as attributes, in the second research phase we focused on an analysis of the syntactic pattern verb + noun in the object function.

2.3 The Second Research Phase: Validation of Verb Candidate Terms

Since our aim was to study verbs, as the main words used to describe actions, an initial analysis was necessary to determine those with some terminological value (primary verbs). In order to determine the terminological value of the verbs, we used several criteria provided by L'Homme [9, 11] and Žele [12].

In the first phase, we considered the lexical-semantic criteria proposed by L'Homme [11]. According to the first criterion, a lexical item may be a term if its meaning is related to the domain; secondly, if its arguments are considered terms (according to criterion 1); thirdly, if its morphological derivations are considered terms themselves (according to criteria 1 and 2) and the lexical item shares a semantic relation with some of them; and lastly, if there is another paradigmatic relation to other terminological units from the domain.

The second and third criteria are also postulated by Žele [12] who distinguishes between primary and secondary verbal terms. Primary verbal terms are specialized verbs, which are mostly derived from nouns, while secondary verbal terms are actually primitive or basic verbs which, in combination with highly-specialized arguments, acquire a certain degree of terminologization.

In order to extract the syntagmatic patterns that we were interested in, we applied the frequency criterion and searched for combinations of verbs and their arguments by using CQL (Corpus Query Language) and the part-of-speech tagset. We looked for all the verbs that appear in the corpus in the verb+determiner+noun structure. The search of the corpus with the "[tag="VER.*"][tag="DET.*"][tag="NOM.*"] tagset resulted in syntagmatic patterns containing definite articles (*le, la, les*) and the indefinite article (*un, une*), but failed to retrieve combinations with the indefinite article in the plural (*des*). Therefore, an additional search was made with the [tag="VER.*"][tag="PRP: det"][tag="NOM.*"] tagset, which not only gave the previously missing combinations, but also those where the noun complement is necessarily preceded with the prepositions *à* or *de* (*au, du, aux, des*).

Next, we used the above-mentioned criteria as a starting point for the selection of verbs. Firstly, we applied the morphological criteria which allowed us to recognize the so-called primary verbs that share the same morphological and semantic relation with the noun term and we checked their definition [13–16] in the field. Secondly, we eliminated all combinations with auxiliary and modal verbs, as well as all combinations with a frequency smaller than three. Finally, by applying the semantic criterion, we eliminated those combinations where arguments were not terms or heads of complex terms. Some results of the application of the above criteria can be seen in Table 4.

3 Proposed Approach

3.1 Sub-categorization of Arguments

Once the key verbs were identified, we grouped together their arguments, i.e. terminological sets occupying the same syntagmatic position. After analyzing terminological sets of different verbs, we realized that the arguments belong to different conceptual categories (Table 5), which needed to be defined with respect to specificities of the

Table 4. Sample of results after the application of the two criteria

Syntagmatic combinations (Frequency)	Nominal terms related to the verb	Arguments
évaluer la valeur (6)	évaluation activité du vendeur, évaluation post achat	valeur perçue, valeur vie client
accepter un prix (4)	acceptation par le marché	prix, prix prédateurs
adopter un comportement (11)	adopteurs précoces; adoption des produits nouveaux	comportement du consommateur, comportement d'achat
développer une offre (11)	développement du produit	offre, offre de réduction
gérer une gamme (11)	gestion de la relation client	gamme (de produits)
lancer un produit (10)	lancement produit	produit, produit dérivé
mesurer la performance (3)	mesure d'exposition publicitaire	performance marketing; marketing à la performance
promouvoir un produit (3)	promotion	produit, produit générique
satisfaire le client (11)	satisfaction	client actif/inactif
utiliser la matrice (6)	utilisateur	matrice BCG

marketing domain. It was then necessary to attribute semantic value to the arguments in order to create semantic types that correspond to conceptual categories for the marketing domain.

Table 5. Arguments of different semantic types

Verb	Arguments Semantic type A	Arguments Semantic type B	Arguments Semantic type C
segmenter	marché	population	public
cibler	marché	clients	segment
servir	marché	client	besoins

As Jezek and Hanks [7] point out, the lexical sets in general language do not necessarily map the conceptual categories. We were interested to investigate this problem in a specialized language and to see to what extent the distributional terminological sets could be mapped into semantic types. For this reason, we combined the onomasiological and semasiological approach to map the two systems, the conceptual and semantic ones. Once the syntagmatic behavior of verbs and terminological units in this specialized corpus was analyzed, experts were consulted in order to create a valid semantic type system for the marketing domain.

Our starting point was the conceptual classification proposed by Sager (1990) which distinguishes 4 types of concepts: (a) Entities (material or abstract);

(b) Processes or Activities (performed by Entities); (c) Qualities or Attributes (of the Entities); and (d) Relations (hierarchical, participatory, associative).

In order to adapt this general classification to the field of marketing, we consulted a marketing expert who presented us with a diagram of marketing activities (Fig. 1).

MARKET RESEARCH ▸ MARKET SEGMENT-ATION ▸ TARGET-ING ▸ POSITION-ING ▸ MARKET-ING MIX ▸ MARKET-ING CONTROL

Fig. 1. Diagram of the marketing process

The marketing of services and products is described as a 6-phase process. First of all, there is the analysis of the market (**Entity/Place**), which is in reality an abstract place where demand meets supply (**Entity/Object**). The market analysis includes both the micro and macro environment. Micro-level participants are consumers (**Entity/Human**), companies, distributors, competitors, etc. Macro-environmental analysis provides information (**Result**) on political, economic, social, technological, ecological, and legal factors. The second phase includes the segmentation (**Process/Activity**) of the market according to the desires and needs (**State**) of consumers. The third phase consists of choosing the target market, while the fourth phase represents the process of positioning and of defining value (**Attribute**) for consumers. The fifth phase defines the marketing mix through its four classic components: decisions related to the product, its price, its promotion, and its distribution in different places or channels of distribution. For services, the marketing mix contains three additional elements: personnel, processes, and physical evidence (the physical environment). The sixth phase is the implementation of controls and monitoring of all these processes.

This description and the consultations with a marketing expert helped us classify the arguments found after the second phase of research in the corpus. These arguments or terminological sets are considered as elementary distributional units to the extent that they define the semantic type system of terminological units as well as the uses of the verbs they combine with. Apart from the types of concepts proposed by Sager (1990), we added some others such as Result, Measure, *Modus operandi*, and State, while entities were divided into Human Entities, Objects, Abstract Entities and Places (Table 6).

The semantic types were defined with the help of marketing experts while the definitions were found in specialized dictionaries [13–16], and both procedures proved to be quite challenging. While domain experts do not think about their field of expertise in the same categories as linguists or terminologists, terminological dictionaries differ in the number and choice of terms. Furthermore, some terms contain several definitions under the same entry, or different definitions exist in different dictionaries, which makes the classification of the term difficult. Consider, for example, definitions of the term *positionnement* in three different dictionaries (Table 7):

Looking at the definitions below, *positionnement* could be classified as [[Attribute]] (of a brand or a product), [[Process]] (activities undertaken to obtain the positioning),

Table 6. Semantic type system in the marketing domain

Semantic types	Terminological sets
Entity/Human	prestataire, équipe, client, clientèle, segment, entreprise, consommateur
Entity/Object	produit, offre, stocks, gamme, solution, ensemble
Entity/Abstract	concept, connaissance
Entity/Place	marché, réseau
Attribute	valeur, marque, qualité, potentiel (de profit, de croissance, de développement), proposition (de valeur), prix, notoriété, identité, image, ambiance, disponibilité, nom, position, comportement
Process/Activity	développement, suivi, processus (de vente), campagne, marketing, relations (publiques), veille, vente, action, promotion, gestion, effort, bouche-à-oreille, achat, communication, publicité, positionnement
Result	performance, impact, donnée, réponse, objectif,
Measure	coût, capacité, efficacité, rentabilité, chiffre, nombre, taux; panier, vente, écart, nombre, retombée
Modus operandi	stratégie, circuit, programme, parcours, technique, démarche, méthode, outil, matrice
State	besoin, demande, risque, sensibilité

Table 7. Definitions of term *positionnement*

Dictionary	Definition
www.definitions-marketing.com	Le positionnement est un terme marketing dont **la définition peut varier** selon le contexte d'usage. Dans son usage dominant, le positionnement correspond à **la position** qu'occupe un produit ou une marque dans l'esprit des consommateurs face à ses concurrents sur différents critères (prix, image, caractéristiques, etc.). Dans une logique volontariste, le positionnement peut désigner **le positionnement recherché par l'entreprise** et non celui perçu par les consommateurs. Enfin, dans une optique d'action (usage rare), le terme peut désigner **l'ensemble des actions** entreprises pour obtenir la position souhaitée dans l'esprit des consommateurs
www.ledicodumarketing.fr	Définit **la manière** dont on souhaite que le produit soit perçu par rapport aux produits concurrents, en fonction des différents critères de marché (prix, mode de vente, publicité….)
www.mercator-publicitor.fr	**Choix stratégique** des éléments clefs d'une proposition de valeur, qui permet de donner à son offre une position crédible, attractive et différente sur son marché et dans l'esprit des clients. Le positionnement a deux dimensions: **identification** à une catégorie de produit et **différenciation** au sein de cette catégorie

[[Result]] (of that process) and [[*Modus operandi*]] (strategy of obtaining certain positioning).

L'Homme [10] identified a similar problem with computing terminology and terminological dictionaries and emphasized the importance of contexts for the

classification or grouping of terms with similar characteristics. Her analysis led her to conclude that verbs (and adjectives) provide clues to the meaning of noun terms. The above reasoning is an example of the difference between how linguists and domain specialists consider the concepts and related terminology. When presented with different definitions, and after the initial hesitation, our marketing expert clearly opted for positioning as a [[Process]], which does not mean that another expert would not consider some other conceptual category.

The categorization of the arguments allowed us to illustrate the syntactic behavior of verbs as well as their meaning potential. According to Hanks [5], "the semantics of each verb in the language are determined by the totality of its complementation patterns". This approach suggests that several meaning potentials co-exist and that they are contextually determined.

Table 8 illustrates the meaning potentials for three different verbs: *évaluer, développer* and *satisfaire*. In combination with arguments from the semantic type [[Attribute]] and [[State]], the verb *évaluer* conveys the meaning of assessing, which is more of a qualitative approach, while in combination with the [[Result]] it denotes appraisal or measuring, which is a quantitative approach. *Développer* in combination with [[Entity/Objects]] conveys the meaning of building or creating, while in combination with [[*Modus operandi*]] and [[Process/Activity]], it conveys the meaning of elaboration, which is more abstract than building. The arguments affect the verb's meaning, which becomes even more obvious when translated into another language. For example, the English equivalent of the verb *satisfaire* in combination with [[State]] would be "to meet", while in combination with [[Human Entity]], it would be "to satisfy".

Table 8. Syntagmatic profile of verbs

Verb	Semantic type	Terminological set
évaluer	Attribute	valeur, marque, qualité, potentiel (de profit, de croissance, de développement), proposition de valeur
	Result	performance, efficacité, impact
	State	risque
	Entity/Place	marché
	Entity/Human	prestataire
développer	Entity/Object	produit, offre
	State	demande
	Modus operandi	programme, stratégie
	Process/Activity	vente, relation, veille
satisfaire	State	demande, besoin
	Entity/Human	client, consommateur

3.2   Sub-categorization of Verbs

Having categorized the verb's arguments, we were interested to see which verbs combine with the terms from the same semantic type. Overall, ten such tables were produced for verbs combining with each of the semantic types specific for the field of marketing. Table 9 exemplifies the verbs that combine with arguments from the semantic type [[Process/Activity]].

Table 9.   Verbs + [[Process/Activity]]

Verbs	Terms from the semantic type [[Process/Activity]]
créer	relations publiques
concevoir	campagne
considérer	marketing
développer	veille, vente
mesurer	opération
réaliser	étude, enquête, recherche
utiliser	marketing, communication, publicité, positionnement
renforcer	veille
développer	relation
guider	action
lancer	promotion
optimiser	gestion
stimuler	effort, bouche-à-oreille, achat, vente

Further analysis of the verbs grouped together as in the Table above showed that they can be categorized into five following classes (Table 10), which seem to be recurrently used in the marketing domain. The verbs were categorized depending on the meaning of their nominal forms and the arguments they combine with.

As the definition of verb classes depends on the arguments they combine with, sometimes it was difficult to categorize a verb as belonging to one or another class. For instance, *servir* combines with arguments such as *besoin* [[State]] and *client* [[Entity/Human]] and could thus be categorized as both a verb of complex processes and a verb for dealing with people. A similar ambiguity exists with the verb *utiliser* which combines with the arguments *méthode* [[*Modus operandi*]] and *produit* [[Entity/Object]], which may be categorized as a verb of complex processes or a verb for handling objects.

Bearing in mind that each verb's behavior expresses its specific meaning potential, we investigated to what extent the members of the same verb class share the same combinatorial potential. However, our results showed that no fixed terminological sets are possible as verbs from the same class tend to share a subset of arguments within a certain semantic type but not necessarily all of the members. This problem was already indicated by Jezek and Hanks [7] who state that "the internal composition of sets changes when one moves from verb to verb" because "their membership has a loose semantic unity".

Table 10. Verb classes and their members

Verb class	Verbs
Verbs of cognition/analysis	analyser, comprendre, concevoir, connaître, considérer, découvrir, décrire, définir, évaluer, identifier
Verbs of complex processes	accepter, adopter, apporter, approcher, assurer, augmenter, capter, collecter, commercialiser, contrôler, couvrir, créer, développer, distribuer, échanger, enrichir, fixer, fournir, gérer, lancer, mesurer, minimiser, offrir, optimiser, partager, positionner, prévoir, promouvoir, proposer, réaliser, réduire, relancer, renforcer, satisfaire, segmenter, servir, stimuler, tester, utiliser
Verbs for handling objects	utiliser, essayer, stocker
Verbs for dealing with people	fidéliser, inciter, aider, animer, attirer, impliquer, influencer, satisfaire, servir
Verbs of communication	communiquer, représenter, formuler

We continued our analysis by evaluating the combinatorial profile of a verb class that regroups verbs of cognition.

The results given in Table 11 illustrate the meaning potential of the verbs in the marketing domain. For instance, the verb *évaluer* is present in several subsets because it combines with arguments from four different semantic types [[State]], [[Attribute]], [[Entity]] and [[Results]]. This kind of information can be used for the disambiguation of a verb's meaning, as well as to illustrate its meaning potential. Taking into account that a verb's specialized meaning depends on the arguments and is context dependent, its polysemy becomes visible as soon as we introduce synonyms or apply a bilingual perspective. Thus, with the arguments from the subsets [[State]], [[Attribute]], and [[Entity]], the meaning of the verb *évaluer* refers to measuring qualitative features and could be an equivalent of the English *assess*, while with the subset [[Results]], it focuses on quantitative features and could be translated into English as *estimate*.

3.3   Correlation Between Semantic Types of the Arguments and Verb Classes

After categorizing key verbs of the marketing domain and the semantic types of their arguments, we compared the correlation between them. As can be seen from the results, each semantic type has its own selection preferences. Certain semantic types combine with the same verb class, but not with the same set of verbs within that class. For instance, arguments from both semantic types [[Processes]] and [[Attributes]] combine with verbs of complex processes, but the verb *stimuler* combines only with the arguments *vente* and *bouche-à-oreille* from the [[Processes]] type. Similarly, both [[Attributes]] and [[States]] arguments combine with the verbs of cognition, but the verb *prévoir* combines only with the argument *demande* from the [[State]] type. Table 12 shows that the most important verb classes in the direct object function in the marketing domain are those of complex processes and cognition as they combine with nine out of

Table 11. Syntagmatic profile of verbs of cognition

Verbs of cognition	Semantic type of the arguments	Terminological set
évaluer, analyser, comprendre, connaître, prévoir	State	besoin, demande, risque
évaluer	Attribute	valeur, marque, qualité, potentiel (de profit, de croissance, de développement), proposition (de valeur)
comprendre, évaluer, regrouper	Entity/Human	prestataire, client
évaluer, analyser, mesurer, valider	Result	performance, impact, donnée, réponse, efficacité, résultat
concevoir, developer, analyser, comprendre, valoriser	*Modus operandi*	stratégie, processus, programme

ten semantic types of arguments. In contrast, there are three verb classes that combine with only one semantic type of arguments: verbs of communication combine only with [[Attributes]], verbs for handling objects only with [[Entity/Object]], while verbs for dealing with people combine only with [[Entity/Human]].

4 Results

In order to describe verbs used in the marketing domain, several criteria were used. Firstly, lexico-semantic and morphological criteria were applied so as to determine which verbs have terminological value in the domain. Secondly, the pattern verb + direct object was chosen as the starting point and the first step in the analysis of the verbal syntagmatic patterns. By using this method, we obtained 190 combinations with more than 3 occurrences in the corpus. The semantic analysis of the predicate-argument structure enabled us to determine 5 different classes of verbs and 10 semantic types of arguments. Out of the total number of 64 verbs, roughly 39 of them were classified as verbs of complex processes, 10 as verbs of cognition, 3 as verbs for handling objects, 9 as verbs for dealing with people and 3 as verbs of communication. Around 80 different nouns were classified into the following 10 semantic types: Entity/Human, Entity/Abstract, Entity/Object, Entity/Place, Attribute, Process, Result, Measure, *Modus operandi* and State. The most significant type by the number of different arguments was that of [[Process]], followed by the semantic types [[Attribute]], [[Measure]] and [[*Modus operandi*]].

The analysis of patterns showed different selectional preferences for each verb class. Verbs of complex processes combine with all semantic types of terminological sets apart from [[Human entities]], where they are replaced with verbs for dealing with people. Verbs of cognition do not combine with the arguments from the semantic type

Table 12. Correlation between semantic types of arguments and verb classes

Semantic type of arguments	Verb class	Verbs from the corpus
Processes/Activities	verbs of complex processes	créer, concevoir, réaliser, développer, lancer, optimiser, stimuler, mesurer
Attributes	verbs of cognition	évaluer, contrôler, valider, analyser
	verbs of communication	communiquer, représenter
	verbs of complex processes	créer, enrichir, mesurer, renforcer, accepter, adopter, apporter, capter, augmenter, réduire, fixer, offrir, utiliser
State	verbs of complex processes	créer, développer, minimiser, réduire, relancer, satisfaire, server, tester, renforcer
	verbs of cognition	évaluer, analyser, comprendre, connaître, découvrir, prévoir
Entity/object	verbs of complex processes	concevoir; créer; développer, lancer, positionner, promouvoir, commercialiser, réaliser,
	verbs for handling objects	stocker, utiliser, vendre, acheter, essayer, gérer, regrouper
Entity/place	verbs of cognition	évaluer, comprendre
	verbs of complex processes	segmenter, approcher
Result	verbs of cognition	évaluer, analyser, mesurer, valider
	verbs of complex processes	réaliser, réduire, fixer
Measure	verbs of complex processes	réduire, augmenter, couvrir, répartir, supporter, renforcer
	verbs of cognition	valider, renforcer, comprendre
Entity/abstract	verbs of cognition	valoriser
	verbs of complex process	utiliser

Table 12. (*continued*)

Semantic type of arguments	Verb class	Verbs from the corpus
Entity/Human	verbs for dealing with people	fidéliser, inciter, animer, satisfaire, aider, servir, impliquer
	verbs of cognition	comprendre, évaluer, regrouper
Modus operandi	verbs of cognition	analyser, comprendre, valoriser
	verbs of complex processes	optimiser, adopter, réclamer, utiliser, concevoir, développer

[[Process/Activities]], which may be due to a method of classification of particular verbs (e.g. *concevoir* – can be considered as a verb of process or cognition). Verbs of communication appear only with the semantic type [[Attribute]], showing their importance in presenting products to the target market, that is, consumers or buyers. Even though the analyzed verbs tend to keep the meaning from the general language, this kind of analysis shows their meaning potential, i.e. nuances of meaning that become obvious in combination with different semantic types of arguments.

5   Conclusion

This research has enabled us to identify essential verbs for writing texts in the field of marketing, to establish semantic categories of predicates and their arguments, as well as to organize the uses of these verbs according to the semantic types of their arguments. We believe that a linguistic analysis focusing on the syntactic-semantic behavior of terms can provide a means of organizing the uses but also reveal the specific meanings of terminological units.

The application of lexico-semantic criteria for the purpose of determining the verb classes of verbs and semantic types of arguments allows for a more precise definition of different nuances of the meaning of words, which may have implications not only for the acquisition of a language, but also for lexicography and translation. In this particular case of language of the marketing domain, this method enabled us to detect verbs that may be considered terms or that have higher terminological value due to the arguments they combine with, and as such merit special attention both in terminographic work and in the development of translation tools. Further research should focus on refining the proposed classification, especially regarding the verb class of complex processes. In addition, an analysis of other syntagmatic patterns containing verbs may reveal further terminologically significant combinations.

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