A model based on pre-conceptual schemas for representing the marketing process in Small and Medium Enterprises (SMEs)

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***Abstract*—Small and Medium Enterprises (SMEs) require strategies for adequately implementing their marketing processes. Some models are intended for graphically representing the main elements related to the SME marketing, but such models are syntactically heterogeneous and scarcely detailed, so they are difficult to implement. Consequently, the communicative intention of such marketing processes is difficult to establish for implementation purposes. For this reason, in this paper we propose a model based on the so-called pre-conceptual schemas in order to take advantage of their syntactic standardized language and their exemplification readiness for implementation purposes. Our model is validated by developing a case study and it is intended to improve the way the marketing process can be implemented in SMEs.**

***Keywords*—Marketing process, pre-conceptual schemas, implementation, modeling.**

I. Introduction

O'Dwyer *et al.* [1] recognize a unique way to perform marketing related to Small and Medium Enterprises (SMEs). Some constraints like the hazard of the market, the unstructured way of working, and the informal and continuously evolving activities performed in SMEs make difficult the implementation of the marketing processes in such companies.

As a way to deal with such constraints, some models have been developed by using graphical notations [2–10]. Such models are intended to include the main elements of SME marketing, but they still exhibit two main problems: (i) they use heterogeneous notations, so they are difficult to combine in order to obtain a big picture regarding the topic; and (ii) the level of detail is still insufficient for reaching the implementation level. As a direct consequence of such problems, we have problems for identifying the communicative intention of the SME marketing process represented in such models and also the members of the SME in charge of implementing such processes lack enough information.

Looking for a solution to the aforementioned problems, in this paper we identify the main aspects for dealing with the SME marketing processes and we create a model by using a knowledge representation graphical language called pre-conceptual schema in order to gather the information SMEs need for the implementation of such processes in a standardized and easy-to-exemplify notation. After proposing our pre-conceptual schema, we develop a case study based on the marketing process of a small beer company for validating the main concepts and the level of detail required for the implementation. The main contributions of this paper are: (i) the definition of the minimum elements of the SME marketing process; (ii) the definition of a standardized model for materializing such elements in SMEs, so the implementation can be improved and easily transferred to the SME members in charge of it, and (iii) the exemplification of such model as a way to lead SME members in the implementation.

This paper is organized as follows: in Section II we present the related work about some graphical models linked to the SME marketing process and we discuss their contents and disadvantages; in Section III we propose our solution based on pre-conceptual schemas; in section IV we validate our proposal by using a case study; finally, in section V we discuss conclusions and future work.

II. Related work

Huarng and Ribeiro-Soriano [2] propose a generic graphical model for marketing and entrepreneurship. Even though they define the fundamental pillars of this subject, the syntax of the model is confusing, as it combines very general concepts in two types of symbols, which make counter-intuitive processes and prevent implementation. In addition, theories, models, and applications are discussed, but their exemplification/details are omitted.

Bleier *et al.* [3] also propose a general model in which they include some factors affecting the marketing of different companies, which are influenced by their size. In this case, they use the same symbol for all factors without distinction, which can lead to confusion in the implementation process. In addition, the lack of processes and details associated with marketing generate important limitations for the implementation process of marketing in SMEs.

Sadiko-Dushi *et al.* [4], Sinčić Ćorić *et al.* [5] and Siu [6] explore the relationship between marketing and performance in different companies. Even though the three models exhibit similarities based on the concept of performance of the companies, the heterogeneity of the symbols prevents the consolidation of the information for establishing the main

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elements necessary for an eventual implementation in SMEs. In addition, even though different factors are provided for influencing marketing based on the performance of the companies, no details or instances are provided for guiding the implementation process of such models in SMEs.

Dash *et al.* [7] present a similar model, but they focus on the relations among different features of a brand with customer satisfaction and purchase intention. The syntax of the model is highly structured, since the different factors are represented homogeneously in ovals and labeled arrows are used for defining the polarity of the relationships among the factors. However, more details are required to be able to implement the model with a view of the marketing process of SMEs.

Poças *et al.* [8], Rakshit *et al.* [9], and Potgieter *et al.* [10] propose more detailed models for the marketing process of SMEs, which allow for recognizing sub-processes, factors, and concepts related to this topic. However, the heterogeneity of the notations hinders the communicative intention of the three models, so it is difficult to establish which elements are actually required to implement the marketing process in an SME. There are elements common to the three models—some of them even appear repeatedly in the other models analyzed—such as customer, product, marketing, development, testing, etc. Such elements can be considered crucial in the process, but they have different sequences within the three models, so their communicative intention remain undefined in terms of implementation.

In all the reviewed models some elements can be considered fundamental to the marketing process for SMEs, but some general problems remain:

- Lack of a common notation for allowing the unification of the communicative intentions of each one for implementing the marketing process in an SME.
- Lack of details for allowing the exemplification of the different concepts and processes.
- Partial views of the process, making the integration of the concepts and processes difficult.

III. Proposed Solution

One of the main problems discussed in the previous Section regarding the SME marketing process modeling is the heterogeneity of the studied representations. We need a notation for gathering the information and representing it in a structured way. Also, we need to exemplify the main elements of the SME marketing process for easing its implementation. Both features can be obtained from the so-called pre-conceptual schemas [11]. Zapata *et al.* [11] propose this model to be used as a way to represent the information of any domain in a standardized way, including: (i) concepts in rectangles differentiated by color—blue for class concepts, green for intermediate concepts, and gray for leaf concepts—; (ii) structural relationships (identified with the verbs BE and HAVE) in ovals; (iii) dynamic relationships (action verbs) in dotted ovals; (iv) possible values in dotted rectangles; (v) connections with arrows; and (vi) implications in grey arrows. We can represent the main process of SME marketing by using such elements, as we depict in Figure 1. Even though such processes can be applied to any company regardless the size, we are focused on the main details the members of an SME should exemplify for implementing the marketing process. Consequently, bigger companies should complement the model with different team members and more detailed information of their tasks. We can follow the arrows in order to identify the entire process as we describe:

- The commercial director registers the client.
- The commercial director registers the need of the client.
- The commercial director defines the general goal of the transmedia project.
- The commercial director defines specific measurable attainable relevant timely (SMART) goals for each marketing stage
- The commercial director defines strategy for each SMART goal, including the tactics the trade director should link to the strategies.
- The commercial director defines key performance indicators for each SMART goal.
- The commercial director calculates the results of the key performance indicators.

Intermediate and leaf concepts are added as needed for detailing the SME process.

Zapata *et al.* [12] propose the usage of leaf concepts and tables for storing examples of values of the process details. The so-called executable pre-conceptual schemas are intended to store the results of the dynamic relationships on the leaf concepts. Such values are the basis of the case study we develop in the next Section.

IV. Case Study

We validate the pre-conceptual schema proposed in the previous Section by applying the entire process to an SME. The SME of the case study is a craft beer producer we call "Beer X Company" (actual name is omitted by privacy reasons). The marketing process starts when the commercial director registers the client, so the leaf concepts name and logo belonging to the client are included in the executable pre-conceptual schema of Figure 2. We, as commercial directors, create a new logo for the company in order to resemble and clarify the goal of this kind of business. Be advised that this process is achieved by other members in the commercial department, but SMEs commonly have only one director.

The second step includes the process "commercial director registers the need of the client," so the leaf concept *need* if filled in with the corresponding information. The executable pre-conceptual schema of this process is included in Figure 3.

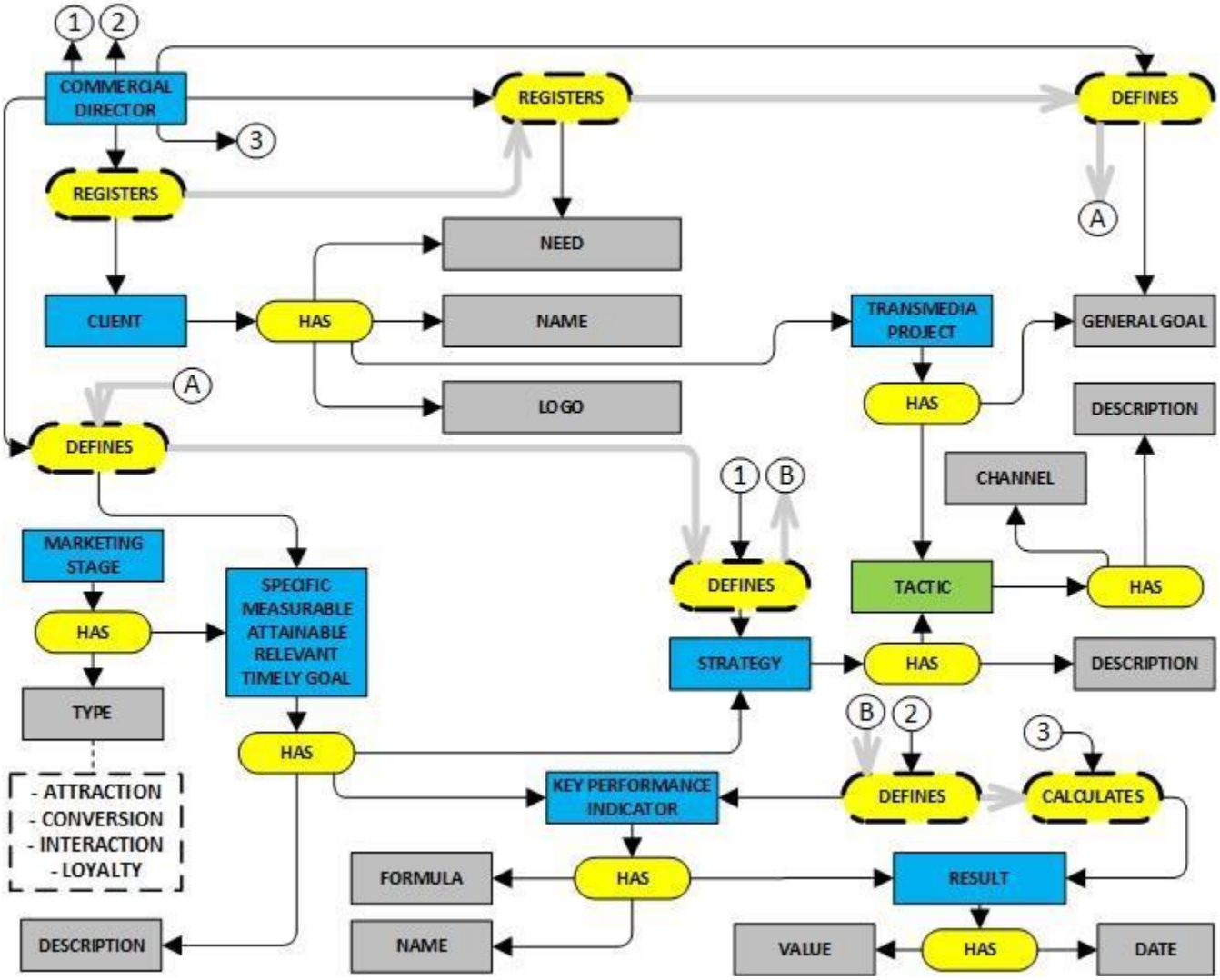

Fig. 1 Proposed pre-conceptual schema about the SME marketing process. Source: The Authors.

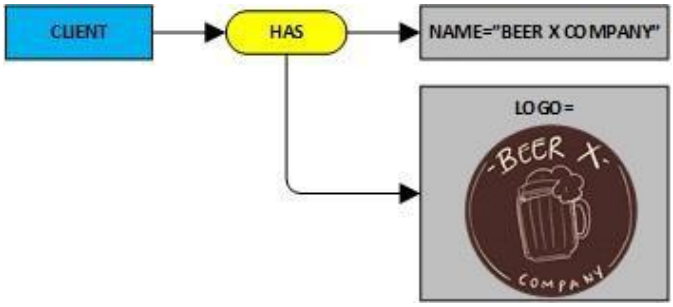

Fig. 2 Executable pre-conceptual schema about the process "trade director registers client." Source: The Authors.

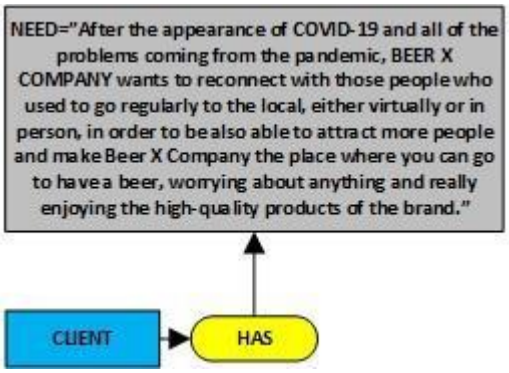

Fig. 3 Executable pre-conceptual schema about the process "trade director defines need." Source: The Authors.

The third step of the process is related to the definition of the general goal of the transmedia project linked to the client. The corresponding leaf concept is then filled in as we show in Figure 4.

The fourth step comprises the definition of the SMART goals related to any of the marketing stages. Such goals are included in Table I.

The strategies related to the SMART goals—fifth step—are included in Table II. Be advised that the marketing stage is used as a linkage between SMART goals and strategies, as you can see in the first column of Tables I and II.

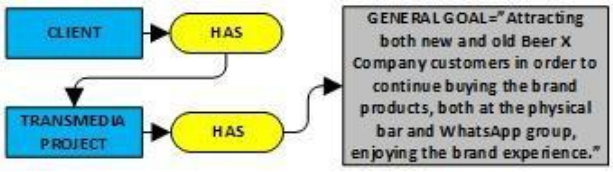

Fig. 4 Executable pre-conceptual schema about the process "trade director defines general goal of the transmedia project." Source: The Authors.

TABLE I

DEFINITION OF THE SMART GOALS RELATED TO THE CASE STUDY

SPECIFIC MEASURABLE ATTAINABLE RELEVANT TIMELY GOAL	
MARKETING STAGE.TYPE	DESCRIPTION
ATTRACTION	Reaching the total goal of 4500 followers on the Beer Company X Instagram page over the course of two months for generating greater brand attraction on this social network.
CONVERSION	Getting at least 20 of the cards delivered from the Beer X Family point system to be returned to the brand full of stamps over the period of two months in order to promote the consumption of craft beer and make them part of the Beer X
INTERACTION	Achieving a total of 3.5% interactions in each of the episodes over the course of a month in the web series, "Beering in Beer X" (which will be published on the brand's IGTV) for generating greater interaction and conversation with Beer X followers and clients.
LOYALTY	Getting 30% of the people who visit the Website to become buyers by using WhatsApp in the course of a month for improving the virtual sales of the brand.

Source: The Authors.

Strategies are divided into tactics, as a way to detail any of the strategies. Again, the linkage between strategies and tactics is the marketing stage, as depicted in Table III.

During the sixth step, the commercial director defines the key performance indicators related to each SMART goal, including the name and the formula of each indicator. Such indicators are included in Table IV.

The last step of the process take place after the definition of the key performance indicators, since we need to measure the effectiveness of each SMART goal in terms of the materialization of the strategies we planned for the company. Consequently, the commercial director calculates the results of measuring the key performance indicators when the tactics are applied and the results are measurable. The results included in Table V belongs to the actual process we develop for the Beer X Company and they demonstrate the application of the process.

TABLE II

DEFINITION OF THE STRATEGIES RELATED TO THE CASE STUDY

STRATEGY	
MARKETING STAGE. TYPE	DESCRIPTION
ATTRACTION	"Buy local, Medellin's Craft Beer": To generate a conversation with our users showing them that Medellin craft beer is one of the best in the market and telling them about the importance these small establishments have for the economic growth of the city. It connects with the present as it shows the situation many locals go through. Taking advantage of the circumstance, we can show what the place is like and the ideals of Beer X Company, attracting followers from Instagram and support such small places in the face of the current situation. It will be spoken in a relaxed and colloquial way, without the need to point to sadness, but encouraging brotherhood and companionship.
CONVERSION	"Football is lived in Beer X Company": Hold events related to football matches played by the Colombian National Team or some other important teams in the Beer X Company bar and invite users to share and watch the matches at the venue.
INTERACTION	"The fastest of Beer X Company": Add different elements related to each chapter of the web series for generating a call to action with users and challenging them to identify which content is hidden or requires special attention, with the intention of increasing visibility of the series.
LOYALTY	"Beer X Company's Web Site": Create a "Beer Test" in which users of the Website will be able to find out which beer of the Beer X Company is ideal for them based on their answers to simple questions, linking them to the product and taking them to wanting to buy from the "Online Catalog," so leading them to buy by using the brand WhatsApp.

Source: The Authors.

The process and the structure of the SME marketing process depicted in Figure 1 was followed step-by-step during this case study. The information we included in the executable pre-conceptual schemas and the tables resembles the actual steps we planned and executed for the Beer X Company in order to improve the SME marketing process, so the implementation was linked to what we included in the schemas and tables. The owners of the Beer X Company could understand the implementation of the SME marketing process from the beginning and they could accompany the definition of each element of the transmedia project. Also, they could experience the results of the key performance indicators coming from the application of the tactics described in Table III. The actual detail of such tactics is out of the scope of this paper. The main contributions of this paper are clearly identified as follows: the information regarding the SME marketing process is extracted from the related work of Section II; the general marketing model for SMEs is depicted in Figure 1; the materialization and exemplification of such a model is included in Figures 2 to 4 and Tables I to VI.

TABLE III

DEFINITION OF THE TACTICS RELATED TO THE CASE STUDY

TACTIC		
MARKETING STAGE.TYPE	CHANNEL	DESCRIPTION
ATTRACTION	BRODCAST POST IN SOCIALMEDIA	There will be 2 posts on the subject on Beer X Instagram, in which we will post real and relevant data regarding the current situation of bars in the city and how our users can support the growth of such places.
ATTRACTION	INSTAGRAM STORIES RELATED TO THE POSTS	Several stories related to the theme of the posts will be made, where the CEO of Beer X Compnay or one of the bartenders will be able to invite users to buy local craft beer, pointing to camaraderie and brotherhood.
ATTRACTION	INSTAGRAM AUGMENTED REALITY FILTER	An official Beer X augmented reality filter and #BeeringInBeerX will be made for Instagram users to use it for supporting the local purchase of craft beer.
CONVERSION	INSTAGRAM POST	Letting our users know what game will be broadcasted at the bar and what time it will start. This way the people will be able to go to the bar and enjoy the game with their friends.
CONVERSION	INSTAGRAM STORIES FORM THE EVENT	Registering in the Instagram stories the events held, craving the other users who could not go or perhaps were not very interested in going to the bar, since a soccer and camaraderie atmosphere is generated while watching the matches.
CONVERSION	BETS	Make a betting system from the beginning of the matches, rewarding those who get their prediction right with a 20% discount on their next beer. Fun dynamics of who scores the first goal for the National Team, how many goals a selected player scores, how many goals the goalkeeper saves, etc. "Beer for party or Beer for craving "
INTERACTION	INSTAGRAM STORIES	There will be a series of five questions per chapter in which the five fastest right answer will have a 30% discount on their second beer.
INTERACTION	INSTAGRAM POST	Posts will be created for announcing the specific time in which the questions will appear for generating expectation in the users and preparing them for the interaction.
INTERACTION	REEL	A reel in which the CEO announces the fastest people for each chapter.
LOYALTY	BEER TEST	"Which of our beers are you like the most?" A test—based on very simple questions—for telling our users which of our beers is ideal for them, inviting them to buy it or going to the store to try it.
LOYALTY	ONLINE CATALOG	An online catalog published on the brand website for showing our customers the products Beer X Company currently include in virtual sales, linking them with the brand official WhatsApp
LOYALTY	SOCIAL MEDIA POSTS	After five posts on social networks (one expectation, one launch, and three attractions) we will let Instagram followers know the Personality Test is available and they can take it at any time, linking them to the Website and craving them to buy their ideal beer via WhatsApp.

Source: The Authors.

TABLE IV

DEFINITION OF THE KEY PERFORMANCE INDICATORS RELATED TO THE CASE STUDY

KEY PERFORMANCE INDICATOR		
MARKETING STAGE. TYPE	NAME	FORMULA
ATTRACTION	Number of New Followers	Total followers at the end of the semester - initial number of followers before the project implementation.
CONVERSION	Deliverance of Cards full of	Cards received / cards delivered
INTERACTION	Total interactions per post	Total Interactions / Total Followers
LOYALTY	Visits to the website from buyers via	Website Visits / Total WhatsApp Purchases * 100

Source: the Authors

TABLE IV

CALCULATION OF THE RESULTS RELATED TO THE CASE STUDY

RESULTS		
KEY PERFORMANCE INDICATOR.NAME	DATE	VALUE
Number of New Followers	04/11/2021	4500-3888 = 612
Deliverance of Cards full of stickers	04/11/2021	20/50*100 = 40%
Total interactions per post	04/11/2021	158/4500*100 = 3,5
Visits to the website that became buyers via WhatsApp	04/11/2021	100/30*100 = 30%

V. Conclusions and Future Work

The nature of the SMEs make difficult the implementation of the marketing process in such enterprises. Factors like the informal way of working and the lack of technical knowledge about such process create barriers to the way SMEs deal with such a situation. Even though we could find some effort for modeling the marketing process inside SMEs in order to explain it for implementation, such models suffer from the lack of details and exemplification, and they are difficult to integrate into a single model since they use heterogeneous notations and different points of view, so SME owners have to deal with incomplete, complex information.

The first contribution of this paper is the identification of the main elements belonging to the SME marketing process, which was performed by developing the related work of the Section II. The model we proposed in this paper is based on pre-conceptual schemas—models for representing knowledge in a clear and close-to-natural-language notation. In such a model we could integrate the main elements coming from the previously reviewed representations by unifying their terminology and including enough details for exemplifying in an appropriate way the values of the leaf concepts. The second contribution of this paper is the model itself. Even though this model has information common to any company regardless its size, this process is simplified in this paper since the structure of bigger companies is more complex than we show. For example, typical SMEs just have one commercial director, but bigger companies exhibit a complete commercial department with many other roles. Therefore, this model is intended for SMEs, but it can be adjusted for more complex companies.

We also developed a case study in the Beer X Company—the name was changed for protecting privacy—, an actual SME located in Medellín. We could explain the marketing process to the owners of the company in order to ease the implementation process. We also followed the steps of the process as we depicted in Figure 1 and we filled in the necessary information for each step. Finally, we could calculate the results after implementing the entire SME marketing process. This validation is the third contribution of this paper, since some other SMEs can follow the same process in order to materialize their own marketing processes.

The results are promising, since the owners of the Beer X Company manifested they clearly understood the marketing process and they could follow the implementation process as it was developed by us as trade directors.

Some lines of future work can be defined for our model:

- Completing some details linked to other elements of the model, such as budget, schedule, and the travel map of the user for advancing in the transmedia project.
- Implementing case studies in different kinds of SMEs belonging to different domains in order to validate the cross-functionality of the model.
- Implementing a software system based on the structure and process depicted in the pre-conceptual schema and defining test cases of such a system by using the information of the case study included in the executable pre-conceptual schemas and the attached tables.

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