STAKEHOLDERS' DIVERGING PERCEPTIONS OF PRODUCT REQUIREMENTS: IMPLICATIONS IN THE DESIGN PRACTICE

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Abstract

A relevant challenge of firms developing new products stands in the capability to fulfil the requirements customers expect, which can give rise to design conflicts. Many techniques consider the relevance assigned to requirements by consequently focusing on those characteristics to which customers attribute more importance. The matter is complicated by multiple kinds of subjects, often indicated as stakeholders, that interact with the product and can influence the success of new products. Stakeholders can manifest different preferences also about requirements which are not intrinsically conflicting. The application of Kano model has been proposed to lay bare the extent of said divergences. An illustrative experiment has been conducted in the footwear industry to reveal the perception of retailers and end users with respect to shoes requirements. It emerges that the consideration of the relevance attributed to a subset of requirements is significantly different. The paper further discusses the expected modifications of design processes followed by companies needing to pay attention to intricate networks of requirements and stakeholders.

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1 INTRODUCTION

The themes of ICED 2015 highlight the purpose of the Conference to focus the attention of the design community on issues that deal with human happiness. Within New Product Development (NPD), it can be hypothesized that a relevant interest should be paid towards the definition of artefacts capable of better complying with customers' wishes and expectations.

With the objective of achieving customer satisfaction, designers and manufacturers encounter difficulties to create products delivering a great variety of functions and benefits at an adequate offering level. It is more and more common to face a plurality of requirements resulting not compatible (at least in the given product framework), as the architectural complexity of the system increases and/or new customers' demands come out.

Different techniques to tackle the problem are proposed, ranging from instruments which leverage creativity to methods aiming at analytically redefining the design problem in a simpler way. TRIZ theory (Altshuller, 1984) offers tools to overcome the presence of conflicting requirements by individuating original technical solutions which do not present anymore the initial dichotomies. By benefitting of a detailed problem analysis, Axiomatic Design (Suh, 2001) proposes to translate customer exigencies into functional requirements that depend to the greatest extent from independent design parameters.

However, more diffusedly in the industrial practice, designers try to avoid solutions that consistently deviate from known concepts, although radical redesigns could sometimes result more promising in terms of fulfilling the posed requirements and performances. For instance, Eckert et al. (2012) remark how designers tend to modify known products as less as possible, so to shorten NPD cycles by avoiding solutions with uncertain feasibility and requiring a great amount of tests.

However, it can easily result that the introduced adaptations are not fully capable to satisfy the initial requirements. Classically, such circumstances lead to optimization procedures that consider the assessed or evaluated relevance of said requirements, see e.g. Quality Function Deployment (QFD) (Akao, 2004). Hence, product features claimed to play a major role in customer satisfaction are prioritized with respect to less impacting attributes.

Design teams determine such priorities, whereas extensive and reliable customer surveys have not been conducted. In large industrial contexts, these teams are composed by experts with different competences (e.g. market experts, product developers, manufacturing managers, directors) and, consequently, with dissimilar perceptions of the importance assumed by each requirement. Multiple stakeholders within the firm can manifest variegated views, complicating decision making in the early designs phases. Such a kind of contrasts are not excluded also when customer opinions have been gathered but need interpretation and, once again, stakeholders' sensibilities cannot be fully harmonized (Ge et al., 2007).

The concept of stakeholders in design is not restricted to the internal domain of the enterprise developing new products. The term has been also popularized to identify the subjects that arouse some interest with respect to the product in terms of delivered benefits and undesired effects. In a more extensive way, stakeholders are all those actors that interact with the product during its lifecycle (Cantemessa et al., 2013). In this sense, with respect to the objective of generating products that participate to make people happy, the stakeholders to be primarily considered in the design phase roughly correspond to the categories structured in (Cantamessa et al., 2013; Bacciotti et al., 2014), which take into account just the lifecycle phases following the market launch. They include buyers, users, beneficiaries and outsiders, intended as those subjects that accidentally interact with the product and the effects it gives rise.

In turn, this subset of stakeholders can have contrasting interests with regards to the product characteristics. This circumstance has been discussed in recent publications too. Thompson (2013) points out the emergence of conflicting requirements when considering multiple stakeholders within the attempt of not discarding relevant information in the application of Axiomatic Design. Panarotto et al. (2013) argue about the difficulties of decision makers in the early design stages in situations characterized by a plurality of stakeholders and the necessity to consider the supply chain.

Misalignments among stakeholders' opinions and needs complicate designers' decisions in the early phases of product development cycles, when the design objectives are formulated. Wrong assumptions in these critical phases can result in failures of the design projects or, however, provoke high expenditures to revise decisions when the design process progresses.

The paper presents a way to exploit acknowledged techniques with the objective of shedding light on the conflicts among stakeholders in order to obtain useful indications for designing and optimizing new products. The proposed investigation approach provides greater awareness about stakeholders' diverging views and that can be replicated in many circumstances in which the alignment is questionable of opinions of diverse subjects interacting with the product. The attention is hereby focused on the cases in which distinct kinds of stakeholders, which act in different stages of the product lifecycle, have hypothetically converging interests, but can assign diverse priorities to the various attributes of the artefact. The case is common for Business-to-Business (B2B) firms which directly sell their deliverables to distributors or third parties differing from the final users. Such organizations have to deliver items marked by high quality to ensure the satisfaction of purchasers, which will become loyal customers just if end users, in turn, will demonstrate to appreciate the products. Thus, the performance levels associated with the product features have to be sufficiently high in order not to dissatisfy any of the stakeholders that follow in the value chain.

The paper is structured as follows. Section 2 clarifies the context of the research by recalling the above mentioned design problems and illustrates the choice of adopting Kano's model (Kano et al., 1984) to investigate the preferences of different stakeholders. Section 3 illustrates a case study from the footwear sector and the emergence of diversified perceptions of shoes shops and users with respect to a sample of product features. Section 4 discusses the outcomes of the investigation and advances hypotheses to face these misalignments in a design perspective. Section 5 closes the paper by summing up the main achievements and by outlining future activities.

2 BACKGROUND AND OBJECTIVES OF THE WORK

2.1 Clarification of the context

The Introduction Section has already clarified that design requirements can emerge in any phase of the product lifecycle due to the variety of subjects that interact with the artefact and that perceive distinct needs. However, besides requirements pertaining the internal sphere of the firm, the ones responsible of attracting customers' attention lie in the phases that follow the market introduction. Hence, designers and manufacturers have to take into account all these product attributes in order to achieve customer satisfaction. In many cases, B2B companies have to consider the characteristics which are expected by both Business-to-Customer (B2C) firms and final users. The closest customer in the value chain has to get satisfied thanks to the quality of provided products. In addition, if these products provide for a lucrative business, thanks to the satisfaction of the end user or buyer, a fidelity bond can be built with the B2B organization. Further on, more articulated value chains can be featured by the presence of other intermediate B2B firms or influencers.

Figure 1 attempts to clarify the situation of B2B enterprises through a basic model of the network of stakeholders, represented by circles. The schema includes two illustrative stakeholders (1 and 2) within the environment of the firm, whereas decisions about the new product have to be tackled. The presence of a B2C subject (Stakeholder 3) means that the firm that is in charge of the decisions is a B2B type. Eventually, Stakeholder 4 plainly stands for the final customer, whose interest towards the product is benefitting of its intrinsic characteristics.

Dots of Figure 1 symbolize the requirements that are maximally perceived by the stakeholders. Illustrative examples are reported, showing that these characteristics can directly impact more than one stakeholder, both at the firm level and after the market introduction (see intersections of the sets). For instance, the orange subset is populated by requirements that provide benefits for both the B2C subject and the final user of the product. With an illustrative purpose, the style of the product can represent a distinguishing trait for both a buyer and a shop selling just a certain typology of items. Figure 1 contributes to clarify the distinction between internal requirements and product features, virtually separated by the dotted line. The B2B organization takes into account the former in order to respect internal constrains and to ease the execution of the performed activities (e.g. design, manufacturing, organization of the production, sales campaigns). The latter are considered in terms of the need to generate stakeholders' satisfaction, with reference to the subjects acting in the marketplace. Some of these requirements regard exclusively B2C organizations (pink subset). On the other hand, the ones pertaining explicitly to the final customer represent issues that each involved firm of the value chain has to take care of (yellow subset). As a result, the B2B company is expected to deliver products fulfilling all the characteristics pertaining to the market environment. But, whereas the ones belonging

to the pink subset have to satisfy just the B2C subject, those included in yellow and orange groups have to be appreciated by both the intermediate seller, in a first instance, and the end user, in a more advanced stage of product lifecycle.
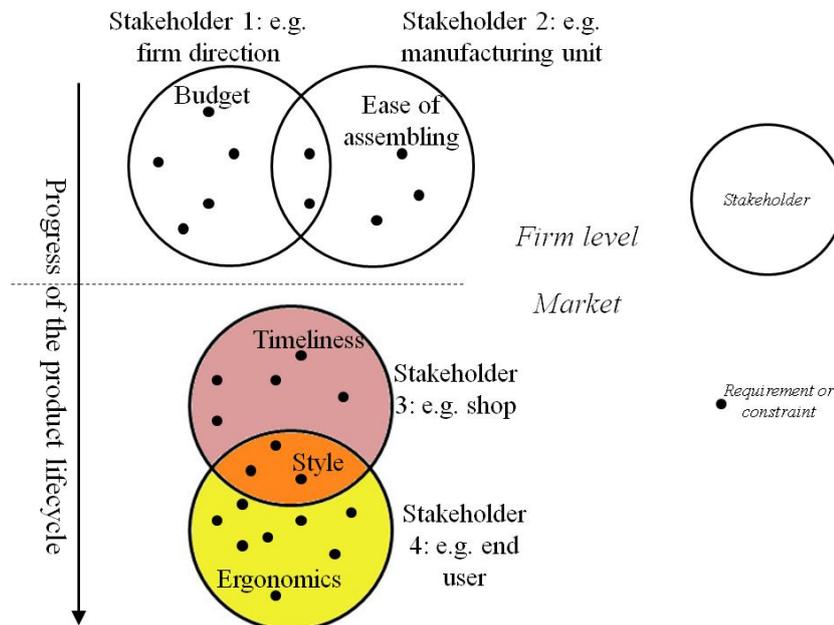
Figure 1. Illustrative scheme of the stakeholders which are present in a B2B context and of the requirements which represent their primary demands

Section1 has highlighted the difficulties in designing products that deal with a great amount of requirements and stakeholders. Problems can emerge in terms of different expectations of more stakeholders with respect to a given requirement and incompatibility between multiple requirements. As already recalled, whereas contradictions cannot be overcome, the design process aims at finding acceptable solutions for all requirements and stakeholders, by balancing performances in light of the assessed relevance of each product characteristic.

In this tangled situation, the requirements that have to satisfy more than one stakeholder (e.g. orange and yellow subsets of Figure 1) can be attributed of a different importance by the plurality of subjects, although their needs are not contradicting a priori. Whereas other kinds of conflicts have been explored in the literature, as outlined in the Introduction, the investigation of the potentially different perception of these specific requirements has not been treated, at least according to authors' knowledge. The consideration of this aspect can result crucial for successfully carrying out product optimization procedures, such as the already mentioned QFD, which individuates the best combination of design parameters with respect to the relevance of the needs to be fulfilled. For the sake of clarity, the paper intends to examine the latter, i.e. stakeholders' requirements with a more abstract definition, which therefore represent a fundamental input for product design procedures.

2.2 Scope of the investigation and choice of the reference model

The present research has to fine-tune a model (or adapt an existing one) through which to conduct the investigation of requirements calling into question a plurality of stakeholders in the market sphere. In this sense, the contribution of the paper stands in a proposal that supports the clarification of the design task in situations characterized by a plurality of subjects to be concurrently satisfied. The approach to be followed has to be applicable for all the industrial domains in which a B2B company operates. With reference to what is claimed in (Ge et al., 2007), it is preferable to introduce structured and formalized methods leaving little space for subsequent interpretations of customers' opinions. Besides, a fundamental requisite is the capability of extracting information concerning the extent of the benefits descending from the fulfilment of user requirements, rather than exploring the effects of modifying design parameters.

Horváth (2004) has attempted to organize the complex articulation of methods supporting engineering design. According to his view, some tools pursue the objective of studying the factors allowing the optimal execution of the product development process by assuring the quality of deliverables. Among them, Kano's theory (1984) is a well-established method to characterize requirements (Deubel et al., 2005) by determining "the relevance of certain product properties in the eyes of the customer". Thanks to its capability to elucidate the effective importance of product attributes, its application has been proposed to overcome the conflicting visions of marketers and engineers participating to NPD activities (Kwong et al., 2011).

More in detail, Kano model is classically applied as a tool to analyze the relationships among the product attributes and the resulting satisfaction of customers ascribable to a given market segment. Customers are asked about their feelings when a given requirement is fulfilled (functional question) or absent (dysfunctional question). The pair of answers gives rise to the designation of a quality attribute, i.e. a category that characterizes the way such a requirement is capable of providing a big amount of satisfaction (if fulfilled) and/or avoiding severe discontent. For the sake of brevity, the authors take for granted the typologies of quality attributes and the way designations follow respondents' answer; these acknowledged issues are reported e.g. in (Walden, 1993). Within any sample of interviewed individuals, different categories are normally individuated for the same customer requirement. Consequently, the distribution of quality attributes characterizes appropriately the perception of a segment of stakeholders with respect to the role played by said product requirement.

With respect to the posed characteristics of a tailored approach for the present study, Kano model seems to fulfil all the requests. Besides its appropriateness for the design objectives to be targeted, its outcomes have been readily exploited in the subsequent design decision phases, e.g. through a diffused integration with QFD (Tan and Shen, 2000; Mehrjerdi, 2010). The widespread application of Kano tools has spanned a large amount of industrial contexts, including the development of products and services. The outcomes ensuing from the application of the model are hardly arguable, thanks to the mechanisms leading to the designation of the quality attributes, as well as to the meaning attributed to these terms in order to achieve customer satisfaction. Quantitative coefficients (popularly known as "Better" and "Worse") (Matzler and Hinterhuber, 1998) can be further calculated to express the extent of requirements' importance. The employment of the Kano model seems thus to fit the exigencies of the research by administering questionnaires to significant samples of people belonging to different kinds of stakeholders. The following Subsection 2.3 illustrates how several contributions describe the application of the model to different sets of customers, which however do not differ in terms of their position in the product lifecycle or their role within the value chain.

2.3 Employment of the Kano model for multiple sets of subjects

As recalled above, Kano model is diffusedly used as a tool to remark the differences among samples of individuals. However, the comparison of different stakeholder can lead to other kinds of implications with respect to investigating customers' preferences according to various distinguishing factors. Some examples follow of literature sources witnessing the adoption of Kano model to investigate the different perceptions of customer requirements shown by separate groups.

Chen and Kuo (2011) explore the responses of the employees of a commercial bank with reference to fifteen requirements characterizing the e-learning services they use. The subjects involved in the Kano survey are distinguished according to their gender, duration of the tenure and position within the bank. In (Bennur and Jin, 2013) twenty-eight product features of garments are analyzed by applying Kano model to two large sets of University students. The samples are distinguished according to the country of the respondents (USA and India), so to remark the different attitudes and tastes of citizen of industrialized and emerging nations. Wongrukmit and Thawesaengskulthai (2014) still employ nationality as a criterion to distinguish the respondents to Kano surveys. The service offered by Thai private hospitals is investigated with respect to thirty-six quality factors, by exploiting the outcomes of the questionnaires administered to patients from four different Asian countries. The main findings reveal different priorities for each group of customers.

With a reverse strategy, Chang et al. (2009) exploit the results of Kano questionnaires to define market segments by benefitting of Artificial Intelligence capabilities. Users of travel websites are characterized according to individuals' tourism preferences and habits about the employment of Internet and e-commerce. These data have been merged with the responses about the perceived

satisfaction originating from fifty-four requirements. The shown approach is useful to offer customized services for Internet users with different tastes and preferences.

As highlighted, gender, personal orientations, accumulated experience and demographic issues are used as common discriminating factors in these in-depth investigations benefitting of Kano's understanding of customer satisfaction. The approach of gathering data from Kano surveys conducted within distinct sets of customers can help manufacturers and service providers to better fulfil the requests of various market segments. The deeper knowledge of customer preferences cannot however support decision making in B2B organizations, especially in those cases that different versions of the product cannot be delivered. In such circumstances, this kind of information can instead orientate the choice of addressing a specific market segment rather than a wider part of the clientele.

3 PREFERENCE ANALYSIS OF MULTIPLE STAKEHOLDERS THROUGH THE KANO MODEL: INSIGHTS FROM AN APPLICATION

Previous Sections have motivated the opportunity of administering Kano questionnaires to different stakeholders, in order to support NPD processes of B2B firms. This approach has been experimented in the footwear sector, by obtaining information from samples of shops (B2C subjects) and end users. According to the value chain that characterizes this industry, shoe factories (B2B companies) are in charge of designing, manufacturing and delivering footwear items by interacting with other firms, e.g. suppliers and third parties. The latter contribute somehow to customer satisfaction, but they do not participate to crucial decisions concerning shoes collection, e.g. style and organization of the production, which are completely supervised by the factory. Collections are sold to retail stores on the basis of offered products and, to a considerable extent, already established fidelity bonds. Hence, in the treated case, the knowledge of the end user, in addition to outlets' exigencies, represents a critical factor in this business sector.

A comprehensive sample of product requirements was individuated thanks to the cooperation of the authors with shoe factories within the project ICT4Shoes (http://www.ict4shoes.it). Among its scopes, the project was addressed at improving business processes in the footwear sector by benefitting of information gathered from the marketplace. An initial set of product attributes included 20 requirements, but 7 of them were considered relevant just for the shops (pink subset in Figure 1). Therefore, questionnaires were fine-tuned to investigate the perception of different stakeholders with respect to the residual 13 requirements (first row in Table 1), according to the rules dictated by Kano model (Walden, 1993). More specifically, the queries ask the respondent to express its feelings with respect to the complete fulfilment of a requirement (functional question) and the absence of the given feature (dysfunctional question). The couple of answers, for which five options are assigned, gives rise to the designation of a quality attribute, still following the well-accepted criteria described in (Walden, 1993). With regards to the application of the model in the footwear case study, it can be noticed that the 13 requirements refer to product features which can be perceived as:

- benefits for both retailers and final customers (orange subset in Figure 1);
- advantages for end users, that shops should care about in order to profitably sell the treated footwear items (yellow subset in Figure 1).

In other terms, the investigated product characteristics do not give rise to conflicts between the considered stakeholders a priori, but, conversely, they should represent common interests. Hence, the application of Kano model is useful to highlight convergences and discrepancies with respect to the relevance that the given 13 requirements are attributed of.

The two sets of respondents were constituted by two samples of convenience including 15 retailers and 112 end users, respectively. Table 1 reports, for each requirement, the quantity of quality attributes resulting from the answers of both samples. More in detail, the Table shows the number of interviewees for which the surveyed product characteristics were categorized as Indifferent, Must-be, One-Dimensional and Attractive (labelled as IN, MB, OD and AT, respectively). Answers giving rise to Reverse and Questionable quality attributes were deemed irrelevant for the purposes of the present study, besides being commonly considered as wrong interpretations of the questions in the literature about Kano.

The last row of Table 1 shows the results of the test about the independence of the two sets of stakeholders in terms of the distributions of quality attributes. The test, employing Pearson χ^2 statistics, aims at revealing to which extent the opinions of retailers and product users are aligned. The final

index corresponding to each requirement refers to the probability of violating the hypothesis under which the two samples are independent. In other words, such a value can be interpreted as the suitability of the answers provided by a kind of stakeholders to represent the opinions of another typology of subject in the value chain.

Grey cells of the Table mark the cases for which the probability value ranges below the significance level α=0,05, as commonly used in hypothesis tests. With respect to such cases, a considerable disagreement is highlighted between the designations of shoe shops and end users. The possibility to overlap the responses of the two sets of respondents is statistically rejected for the highlighted requirements. In addition, many other product features show not negligible levels of dissimilarity by considering the perceptions of the two samples of stakeholders. With reference to these requirements, it is very unlikely that the divergences between the two samples are just dictated by case. On the contrary, similar outcomes are obtained with respect to some requirements, e.g. cheapness and space limitation of the shoes, for which the indications provided by a sample would be roughly representative also for the other group of stakeholders. However, the highest values of probability do not reach scores that would statistically demonstrate the equivalence of the two stakeholders sets, i.e. 0,95 if the same significance level is employed with a different way of reading.

Table 1. Results emerging from Kano questionnaires administered to sets of shoe retailers and end users

Requirement		Adaptability of the shoes to the external environment conditions	Comfort	Completeness of the shoes	Manufacturing care	Cheapness	Connection with the apparel trends	Space limitation	Duration of aesthetical characteristics	Mechanical strength of the shoes	Compliance to a brand	Possibility to reuse or recycle the shoes	Style, aesthetics	Option for online purchases
Shops	MB	2	8	10	3	1	1	0	1	6	1	0	1	0
	OD	0	5	3	11	2	9	0	12	7	3	0	13	0
	AT	4	0	1	0	4	4	2	1	1	5	3	0	7
	IN	9	1	1	0	6	1	12	1	0	6	12	0	8
End users	MB	12	54	56	42	8	13	0	28	57	10	8	16	3
	OD	18	26	8	38	16	12	0	57	42	11	25	43	11
	AT	36	17	13	8	47	26	28	15	6	25	28	35	35
	IN	42	15	35	24	38	61	68	10	6	63	51	18	60
Independence with χ^2 test		0,30	0,37	0,13	0,02	0,86	0,00	0,76	0,27	0,73	0,52	0,08	0,00	0,49

4 DISCUSSION OF THE RESULTS

Section 3 has illustrated a possible way of investigating differences among various stakeholders with respect to the perception of product requirements. The employment of Kano model has emerged as a suitable technique by considering the necessities of the present study. As well, the statistical test of independence between two distributions ranges among the opportunities to reveal the significance of the observed discrepancies. Actually, the followed strategy does not seem inappropriate for any circumstance in which different stakeholders should indicate priorities about requirements to be fulfilled by a product framework, unless they intrinsically have conflicting interests.

The conducted investigation underlines that very different views can emerge also when stakeholders are considered that have not plainly incompatible interests about the product requirements a B2B

company has to fulfil. In this sense, design decisions based on customers' opinions and preferences can result wrong if not all the stakeholders are taken into account that interact with monitored product features. Design tasks considering the relevance of requirements are particularly affected by mismatches about the views of subjects playing a different role in the product value chain. Design parameters are commonly optimized in order to achieve the maximum extent of customer satisfaction. In these circumstances, the design process could lead to unsuitable outcomes because of disregarded preferences of other stakeholders.

As ascertained in the present paper, many organizations have to face situations characterized by tangled networks of requirements and stakeholders. Consequently, firms (B2B enterprises in particular) should accurately examine the exigencies of multiple subjects and follow a very cautious approach aiming at avoiding discontent of some relevant player.

With respect to product value chains mirroring the situation described for the considered shoe factories, a further opportunity is represented by conducting conjoint investigations of end users together with B2C subjects. This possibility should be plainly limited to requirements falling into the yellow subset of Figure 1, i.e. those benefits directly impacting final consumers. Such a strategy would avoid the emergence of retailers' wrong perception of final buyers' preferences. As a result, B2B companies would pay less efforts to harmonize diverging exigencies of different stakeholders, while B2C firms' projection to market would better match customers' orientations. In this sense, advantages could be obtained also by B2C subjects. However, this kind of approach can result applicable just in cases B2B organizations have developed accurate customer management practices and restricted to B2C clients for which a considerable extent of trust has been achieved.

In the multitude of cases such a kind of partnerships cannot be established, B2B firms have no alternative than taking into account the diverging visions of B2C customers and final buyers. As previously outlined, the approach to follow should prevent any stakeholder from manifesting dislike to the developed products. Insights of the Kano model propose separate terms to consider the level of unexpected satisfaction implied by well-fulfilled characteristics and the extent of potential dissatisfaction provoked by missing requirements. These terms stand in the mentioned "Better" and "Worse" coefficients, which can be calculated as in (Walden, 1993; Matzler and Hinterhuber, 1998), by benefitting of the results of Kano questionnaires and, specifically, of the distributions of quality attributes. It is then possible to determine the values of both the indexes for different sets of stakeholders. According to authors' view, a cautious strategy to implement could consider for each requirement:

- the lowest amount of additional satisfaction that could be generated by outstanding offering levels, therefore the smallest "Better" coefficient;
- the most severe discontent that could be generated by poor product performances, hence the highest "Worse" coefficient (in absolute value).

In this way, enterprises dealing with different stakeholders could prevent themselves from overestimating the excitement resulting from well-designed products and underrating the consequences of bad performances.

Table 2 indicates the values to be taken into account in the presented case study for both "Better" and "Worse" indexes (in italics). The suggested option for managing diverse opinions of stakeholders would lead to the consideration of two values standing for two different nuances of requirements importance. In the practice, this would imply the use of product optimization techniques which exploit the two coefficients in a quantitative way, like e.g. in (Delice and Güngör, 2009), or the introduction of variables which balance their estimated impact in determining customer satisfaction, by exploiting e.g. the findings of (Mittal et al., 1998), as proposed in (Borgianni et al., 2010). It is worth noticing that it is possible to employ selected "Better" and "Worse" coefficients regardless the investigation of a plurality of stakeholder has given rise to similar results, as revealed e.g. by statistical tests.

Another option stands in the implementation of tailored techniques capable to perform optimization processes in cases characterized by multiple requirements and stakeholders. Algorithmic tools have been developed in the fields of Systems and Requirements Engineering. A discussion about the most proper means to integrate into the initial phases of engineering design are out of the scope of the present work, although it deserves future research. The authors believe that the individuation of the most beneficial instruments coming from these disciplines hardly depends on firms' skills and sectors.

Table 2. Better and Worse indexes, belonging to Kano's field of knowledge, calculated for previously considered product requirements

Requirement	Better index for shops	Better index for end users	Worse index for shops	Worse index for end users
Adaptability of the shoes to the external environment conditions	0,27	0,50	-0,13	-0,28
Comfort	0,36	0,38	-0,93	-0,71
Completeness of the shoes	0,27	0,19	-0,87	-0,57
Manufacturing care	0,79	0,41	-1,00	-0,71
Cheapness	0,46	0,58	-0,23	-0,22
Connection with the apparel trends	0,87	0,34	-0,67	-0,22
Space limitation	0,14	0,29	0,00	0,00
Duration of aesthetical characteristics	0,87	0,65	-0,87	-0,77
Mechanical strength of the shoes	0,57	0,43	-0,93	-0,89
Compliance to a brand	0,53	0,33	-0,27	-0,19
Possibility to reuse or recycle the shoes	0,20	0,47	0,00	-0,29
Style, aesthetics	0,93	0,70	-1,00	-0,53
Option for online purchases	0,47	0,42	0,00	-0,13

5 CONCLUSIONS

The present paper deals with the difficulties faced by industries, and particularly by B2B organizations, in terms of fulfilling the product requirements expected by several stakeholders. A first contribution stands in the attempt of characterizing the requirements in terms of stakeholders' interests and the phases of product lifecycle they emerge. Further on, an effort is paid towards elucidating the potential sources of conflicts among stakeholders, leading to increase the complexity of design decisions. A particular case of conflict has been investigated more deeply. It focuses on the dissimilar relevance attributed to product requirements by different stakeholders to be satisfied, who should have convergent interests. Through an application in the footwear sector, the paper has illustrated how existing instruments, i.e. those belonging to Kano's toolkit, can be applied to shed light on the explored divergences. The investigation reveals how retailers and end users can manifest evidently misaligned perceptions with regards to many product requirements.

In these cases, B2B firms are urged to consider the different opinions of stakeholders and, within NPD cycles, correctly balance their preferences, so to avoid the severe dissatisfaction of some subject. Modifications of design practices are expected to include information coming from multiple stakeholders. In accordance with the principles underlying Kano model of customer satisfaction, the authors suggest to pick up "Better" and "Worse" coefficients from the outcomes regarding different clusters of stakeholders, as discussed in Section 4 with the aim of avoiding hazardous design choices. However, industrial experiments are needed to test the exploitation of these values and consequent adjustments of established design techniques swivelling on product requirements' relevance.

In addition to the further development of the above approach, it is in the authors' intention to replicate the investigation procedure for different kinds of conflicting requirements. For instance, the employment of Kano tools could be considered to reveal the extent to which particular stakeholders (e.g. consumers vs. influencers or users vs. outsiders) have intrinsically contrasting exigencies about certain product requirement.

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