Footwear Design Crowdsourcing Platform Model For Strengthening Of the Competitiveness Of The Footwear Industry

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Abstract— **The volumes of global footwear production and consumption have been steadily increasing. In particular, the income increases of China and Southeast Asian countries have led to the rapid growth of footwear production and consumption in Asia. However, while advanced countries still include footwear business as one of their growth engines, Korea regard it as stagnant or diminishing. However, beyond the category of simple manufacturing, footwear industry involves the integration of highly functional products, parts manufacturing, and marketing business, and includes expertise in the fields of design, materials, and epidemiology. The strengthening of the shoe industry is an important potential driver of the overall economy. The strengthened competiveness of the footwear industry will play an important role in the overall economic growth. Crowdsourcing is an approach that encourages the participation of specific communities or unspecified masses in a company's production, service, or problem-solving processes to increase efficiency. To this end, this paper suggests the crowdsourcing platform model built through the integration of footwear design and IT for the ultimate enhancement of the competitiveness of the Korean footwear industry. Following this paper, a study about the practical development, application, and active use of such platform needs to be conducted. One limitation of this study is that the platform is yet to be developed or applied. Future research should focus on developing an actual platform and further studies in its application and vitalization.**

Index Terms— **crowdsourcing, crowdsourcing platform, crowdsourcing model, footwear industry, footwear design**

I. INTRODUCTION

The footwear production and consumption volumes are rapidly increasing across the global market, particularly in Asian countries. The value of the global footwear market is expected to grow to USD 2.1 trillion by 2020. However, the footwear industry, which is still regarded as part of the driving forces for growth in advanced countries is regarded in Korea as stagnant or diminishing, or not having any potential to achieve further development. However, beyond the category of simple manufacturing, footwear industry involves the integration of highly functional products, parts manufacturing, and marketing business, and includes expertise in the fields of design, materials, and epidemiology. Therefore, the advancement of the footwear industry will play an important role in the overall economic growth. The Korean footwear industry is currently striving to remove the stigma of a diminishing industry and make a leap as a knowledge-based manufacturing industry that integrates advanced technologies, based on constant supports from local municipalities and the strenuous efforts of businesses. In particular, Korean footwear businesses are faring well in the global market with their technological prowess.

However, most of the existing studies about the Korean footwear industry have focused only on materials, biomechanics, and parts from the engineering perspective, and only very rare studies have dealt with the plans to strengthen the competitiveness of the footwear business. Largely, the existing studies concentrated on nothing but the investigation of the current status of the footwear industry and the establishment of political methods to vitalize the industry, and stopped short of being furthered into academic researches for strengthening industrial competitiveness. Therefore, this paper intends to suggest a crowdsourcing platform model for an ample supply of footwear designs to achieve the ultimate goal of the enhancement of the industrial competiveness of the business.

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II. THE FOOTWEAR INDUSTRY AND CROWDOURCING

In the 1960s and 1970s, as the original equipment manufacturer (OEM) of global sports brands, the Korean footwear industry has grown into "the footwear factory of the world." Since then, it has heavily depended on OEM orders from overseas countries for 30–40 years. Since the 1980s, when global leading shoemakers began to use Korea as their largest production base in line with the advent of the global division of labor system, the Korean footwear industry has rapidly developed. At that time, the industry mostly produced sports shoes, most of which were exported. However, since the 1990s, when China was designated as a special economic zone and granted numerous benefits to foreign investment companies as part of its efforts to open its economy to foreign businesses, many global shoe brands have relocated their production base to China. As a result, the Korean footwear industry has been emptied, with a drastic decrease of exports from USD 4.3 billion in 1990 to 0.8 billion in 1998[5].

Since 2005, the Korean footwear industry has begun looking into design and brand marketing rather than manufacturing[6]. Footwear businesses in Korea developed unique designs and launched their own brands to occupy global market shares. They have constantly conducted research and development to produce high-quality functional footwear, and establish their own brands in the global market. In addition, by making strenuous efforts to develop cutting-edge materials and novel products, designs, and brands, they are striving to revitalize the stagnant footwear industry. In footwear production, the design and manufacturing process has been separated long ago. The separation has begun in the 1960s when the major footwear brands of Europe and the United States have followed the international division of labor system to save on costs. At that time, their headquarters were responsible for design and marketing, while the low-cost production bases in Korea and Taiwan were manufacturing their products on behalf. Korean footwear businesses, the then–manufacturing partners of global shoemakers, are now focusing on designing and marketing innovative products, entrusting the manufacturing process to themselves or subcontractors in countries with a lower labor cost.

The footwear business, as it is currently transitioning to a high value-added enterprise, has to focus on strengthening its design capability. According to a research [4], the general design qualities of Korean brands are on par with those of others in the global market. However, it is quite clear that they lag behind footwear powerhouses such as Nike, Adidas, Reebok, and Fila.

In the Korean footwear business, issues of concern are the lack of professional footwear designers; problems, such as imitation products, due to poor design property protection; and difficulties in collecting design information. To cope with these issues, local municipal governments and design institutions are providing design trend information to relevant companies in the industry. In addition, businesses are seeking to obtain noble footwear designs by hosting design contests for designers and local students, but the outcomes are not enough to solve the design shortages in the industry. Footwear businesses should develop and utilize new business models in which they can continue creating value-added products, which could lead to practical income streams, by finding new concepts as well as unique and creative ideas, and bringing them into the market. In particular, they are required to conduct systematized design activities to burnish their brand images and enhance their competitiveness.

The idea of crowdsourcing was suggested by Jeff Howe, the guest editor of Wired magazine in 2006[3]. It is a combination of the word "crowd" and "outsourcing," and is one of the open collaboration methodologies. It is an approach that aims to raise efficiency by engaging a specified or an unspecified group of people in the production, service, or the problem-solving process of a company.

Crowdsourcing is divided into two categories: integrative crowdsourcing, which gathers the collective intelligence of people, and selective crowdsourcing, which gives the company some options among the various ideas collected. Integrative crowdsourcing literally involves gathering the collective intelligence of the public and integrating them into a single idea. It applies the concept of open-source software to other sectors. Unlike integrative crowdsourcing, selective crowdsourcing provides the company some options collected from the public. It is often implemented for idea contests, competitions, and R&D problem-solving. In his crowdsourcing theory, Howe (2008) has categorized business crowdsourcing into six types: prediction markets, crowd casting, idea jam, crowd creation, crowd voting, and crowd funding[2]. Successful crowd sourcing requires a few conditions.

Table I: Conditions For Successful Crowd sourcing

	Condition
1	Clear goal
2	Selection of a crowd platform with diversity and expertise in balance
3	Systematic screening
4	Proper financial compensation

First, the company should have a clear goal for crowdsourcing. Recently, many companies have placed a "Suggestion Box" on their official website, but they fail to garner opinions that are effectively helpful. This is because they focus only on the existence of the box, without considering what the customers want or how to use the suggestions collected in the box. Second, if you have a clear goal, you should select a crowd platform. The key for the successful selection of a crowd platform lies at the balance of diversity and expertise.

For crowd selection, a company can use one of the existing crowdsourcing platforms or build an entirely new community. Third, crowd sourcing requires systematic screening [1]. With the conclusion of a crowdsourcing project, a company can gather a huge amount of ideas and solutions including irrational thinking, ideas with regard to the breach of copyright, or unfeasible ideas. In this case, the company has to spend a lot of time and resources for sorting out a huge volume of ideas. Thus, the company can use a crowd platform also for executing

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the screening process. If it asks the public to vote for the best idea, it can carry out the screening process in a much easier way. Finally, proper financial compensation should be given. A successful crowdsourcing case can create a win-win situation for the company and its customers or potential customers. Therefore, the company that wants to launch crowdsourcing has to set up a proper compensation program. In other words, it should give out incentives to fully motivate the participants.

III. REQUIREMENTS OF THE INDUSTRY

To develop the crowdsourcing model for the footwear industry, this study has surveyed the requirements of the industry. Shoe manufacturers answered that new measures to deal with the fluctuant market trend should be in place. They prefer to have a set of fashionable and trendy designs that appeal to customers rather than have a variety of designs. In other words, they also prefer to manufacture products that clearly reflect the market demands and the fashion trend. The manufacturers' desire to reflect the market demands in their product planning is quite natural. Given that footwear manufacturing is a part of the fashion industry that has to respond to the market trends promptly, such requirements of the manufacturers need to be given more weight. Therefore, it is necessary to set a framework to guarantee the demand for design and examine the design feasibility through public evaluation. In addition, they asked the design patent issue be solved. Design theft is a sensitive issue in the fashion and footwear industries, and the shoemakers ask for strong countermeasures.

Companies that mostly focus on footwear design require the industrial production design to be separated from the concept design. Currently, many footwear companies are in need of a professional design workforce, but the whole industry has only a few professional footwear designers. Some shoe manufacturers do not even have their own design team or let skilled shoemakers take the role of designers. Therefore, participants in design crowdsourcing should include the general public and students to collect novel concept designs. In addition, some manufacturers may need industrial production design, which should be treated differently from concept design. Professional designers should be motivated to more actively participate in footwear design as it involves not only the design itself but also functionality, and responds to a lot of feedbacks and corrections. Design companies should also ask design-related communities to participate in the crowd sourcing platform.

IV. CROWDOURCING MODEL OF FOOTWEAR DESIGN

Types of crowdsourcing are defined in various ways, but there are no definite criteria on crowdsourcing. For this paper, selective contest–type crowdsourcing is selected for the footwear design crowdsourcing platform model. For this type, the company selects one of the various ideas collected from the public through evaluation and voting.

A 2P2R business model is established to ensure that it is activated by the virtuous cycle structure shown in Figure 1 and that participation motivation is more strengthened.

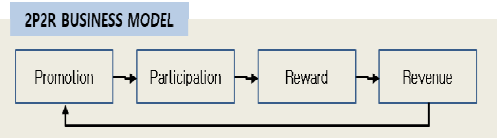


Fig. 1. Business Model

In this model, user convenience is prioritized. The subscription process is designed in a way that the participants can join the platform by simply inputting the minimum number of information, and go through brief referral and review procedures. The communities required by each user type (design selector / design provider) are provided to promote participation. To expand user participation, it is ensured that users can briefly and clearly describe design requirements, and promote their projects by clicking the social media link and activating the purchase button in the evaluation and judgment process. In addition, the minimum design cost is set, and the standard for design cost calculation depending on the percentage of selection and sales is introduced. To attract the public to participate in design evaluation, when the participants click the design evaluation or other project participation button, they are provided with points that can be utilized in making payments for purchasing a product based on the design later on.

The users of the footwear design crowdsourcing platform are categorized as design requester, design proposer, and design evaluator. Design requesters are footwear manufacturers and suppliers, and design proposers are footwear designers and footwear design companies. Design evaluators are the unspecified public including design users, the general public, and students. Such user composition is made up to strike a balance between "diversity" and "expertise" in the crowd platform, as mentioned above. Design evaluation may be carried out through expert evaluation, public evaluation, or combined evaluation. Expert evaluation is conducted by design requesters and the group of design experts designated by the requesters. Public evaluation is performed by design requesters, proposers, and general platform subscribers. Finally, combined evaluation is a phased process that integrates expert evaluation and public evaluation. It reflects "systematic screening" as one of the conditions for successful crowdsourcing, as mentioned above.

To give a "clear goal," this model requires the user set criteria for design request and design proposal on the platform. Design requesters should provide a clear description of the sector, goal, target season, and use of the design. Design sector means the main use of the footwear such as sports, fashion, outdoor, or summer season look. Design goal should include the general background and concept. Design proposal should provide information other than those included in the request. Design type is divided into concept design and production design. Concept design requires drawings for the side view, vamp, tongue and rear view. Production design requires the detailed information of the materials and colors for the upper, sole, tongue, shoelace, toe cap, back counter, and stitch, in addition to those needed for concept design. The process for design selection is shown in Figure 2.

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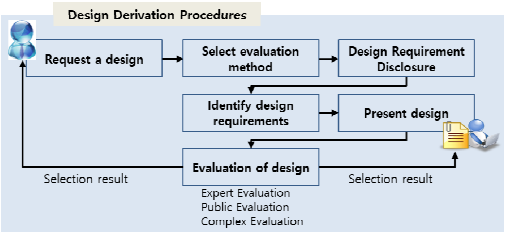


Fig. 2. Process for Design Selection

First, a design request should be submitted on the platform. The design requester should provide the detailed information of the request and decide on how to evaluate the design before disclosing their request on the platform. The design proposer checks the details of the design request and presents a design. The proposed design has to go through the evaluation process, and the evaluation result is finally delivered to the design requester and the design proposer.

The footwear design crowdsourcing platform model described above is shown in Figure 3.



Fig. 3. Configuring the Platform Model

V. CONCLUSION

This paper suggests a crowdsourcing platform model for an ample supply of footwear design to strengthen the competitiveness of the Korean footwear industry. To establish the model, the trend of the footwear industry, the concept of crowdsourcing, and the application method were studied. The requirements and desires of footwear companies were also surveyed through practical visits. Then, a crowdsourcing platform model is suggested, reflecting the requirements of and trends in the industry.

However, the actual development and application of such platform model have not yet been carried out, and in this respect, follow-up studies for the actualization of the model should be conducted in the future.

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