USER EVALUATION OF THE WATERPROOF JACKET

Sonja Šterman

University of Ljubljana, Faculty of Natural Science and Engineering, Department of textiles, Textiles and Fashion design, Slovenia
e-mail: sonja.sterman@um.si

Abstract:

This article presents the key elements in understanding the development and design of uniforms for the employees of the Customs Administration of the Republic of Slovenia for the purpose of corporate identity. It will show, in detail, the process from design to analysis of evaluation data for the multifunctional waterproof jacket, after three months of wearing by the employees. The success of a corporate uniform depends on how effectively it serves a specific function, makes the organisation recognisable in society and also on the satisfaction level of the user. The results are presented in four groups: First, the relationship between design and communicating identity for recognition in the market; Second, the determination of the pattern and functionality considerations; Third, the selection of materials and their properties; Last, the quality of workmanship, giving practical value to the above parameters.

Keywords:
Uniform, Design, Functionality, Questionnaire, User

Introduction

Uniforms are clothing designed for workers of different professions. This means the starting point is the special characteristic of fabrics, which could offer durability in the different weather conditions. Functionality of fabrics should be in perfect combination with the functionality of models, in which lines are adapted to the needs of movement at different work places. This is the reason for the great stress on ergonomic design, which influences the comfort of wearing. Also important are multifunctional proposals for better possibilities of combination. The role of uniformed people in society is extensive. “A uniform is a means of belonging and of making people belong” [1]. The significance is that a uniform is work clothing and indicates membership of a group in a social environment. This can subconsciously affect the relationship of the uniformed person with society. The more frequently workers are exposed in public, the stronger their symbolic communication connection with society. This is the reason that corporate identity should be designed in this way: that in the aesthetical sense it respects laws of fine arts and artistic theory, but at the same time it is subordinate to the technological laws of use of materials and workmanship, and levels of comfort, even in extreme working conditions. Clothing and footwear influence the safety and productivity of employees as well affect their contentment and well-being.

A lot of studies prove that clothing has the power of symbolic communication. It works as well for uniforms, which define and indicate the role in society; a social group understands roles better and more clearly than it would without uniforms [2]. This use of uniform as communication can also be seen in terms of power or economic status; for example, police officers’ and nurses’ clothing. These uniforms tell us what kind of services we can expect from the people wearing them. Also, the style and colour of uniform may modify the relationship of citizens to viewing and responding to uniforms. Through uniforms people are influenced in terms of the way they comprehend authority [3]. If the uniform is designed in an incorrect style, the results in behaviour could be a very bad experience. This is also confirmed in the article [4] about flight attendants. It explains that with the incorrect style of clothes, the authority imparted is changed. Employees who had to wear casual, instead of elegant wear, felt worse and less professional, and they gained less respect in their relations with the passengers.

The choice of colour of the uniform is very important. Each colour has a meaning which can influence the thoughts and emotions of people [5].

It is important to take into account the communication power of clothing when designing a corporate wardrobe: each piece must be defined as part of the whole outfit or system of communication. It is important that corporate identity is tied together in all its components: clothing, footwear, hats and other accessories, and that the colours and materials are appropriate. On these factors depends the influence of the clothing on society, and how society will accept the new clothing.

One key factor is that clothing protects health, as it is affected by living conditions, work environment and lifestyle.

In many aspects of our life we do not have a large influence. We cannot usually change our working conditions and the associated work clothing because work conditions are determined by the employer, not the employee. The work conditions inside one factory or organisation are very different from another. Some
workplaces demand special movement, which is the reason that workers need adapted clothing. Research [6] shows that experts are always studying the aims, methods, concepts and theories of how to offer better ergonomic working conditions. In parallel, other experts are studying the ergonomics of patterns, clothes and the interaction between pattern and the body [7]. Specialists analyse the changing attitude of clothing by extreme movement or burdening [8], and the exposure to extending or compression. These changes limit the freedom of movement and feeling. The aim of the designer is to consider the demands of the development of shape and details of the model. The same aim leads the patternmaker when they construct a new pattern for the model.

The design concept of uniforms depends on the customer’s desires and requirements. Also important is the customers’ brief about what they want to reflect in the new uniform. It is crucial to exchange information throughout the key phases of development of the new uniform (as comments on sketches and offered materials) as well as final evaluation information after a few months of wearing the new uniform. All this information is used for analytical purposes and, eventually, for the starting point of any following work. In the proceedings, the customer was the Ministry of Finance of the Republic of Slovenia, Customs Administration of the Republic of Slovenia (CARS). The uniforms for their service are designed to be worn in different work environments and varying working conditions. This influenced the design at the concept stage, with the idea of two complementary designs. They were distinguished regarding the tasks to be carried out and exposure to different weather conditions. Both sets of circumstances dictate the necessity for special properties and qualities of clothing for the separate work places.

The demands are connected to the specifics of the work of the employees at the Customs Administration. Some work inside in offices; some are outside, where they are exposed to the different weather conditions. This was the main reason for the need to develop multifunctional clothing. Multifunctional systems clothes are garments that allow the so-called ‘onion’ (wearing of layers of clothing) way of wearing clothes according to weather conditions. This is used in modern types of uniforms. With this system of wearing, the number of clothing pieces is smaller and the variability of the combinations and adaptability to the different weather conditions is larger. With a smaller number of clothing also comes the advantage of reducing costs of purchase, within limitations of what is reasonable. This was a pressing consideration. Another way to reduce costs is to include materials which are produced to high quality and also in quantity. The “European colour of Customs” is mostly green in different shades, so the direction here was clear. As with the designing of other uniforms, the individual wishes of the wearers were not possible to consider [9]. Other constructive proposals connected to the experience of wearing previous uniforms is always welcome and worth paying attention to.

The aim of this article is to present the approach to designing corporate identity through uniforms, which is influenced by different perspectives about what contemporary uniforms should include. The major consideration at the starting point of design is the feedback from users who are wearing these uniforms. Their answers are precious; because they help in the improvement of the uniform. They also represent the trend of designing the next corporate design. For the previous uniform, designed when independence was attained in 1991, the most important feature was the recognition of the service, weather protection and to build the authoritative official position. Today, these properties are not emphasised; there is a change in the strategy that is now focused on being user-friendly.

**Fabrics and methods in uniform design for the CARS**

The design of corporate clothes in order to present a solid identity is a process. It is essential to capture the wishes and symbolism of the corporate image of the customer and adapt to the requirements of individual work places. The task for the designer is to consider all factors with the aim that all employees in the clothes feel safe and comfortable in their working environment in all conditions. The aim in designing was to find the balance between artistic and aesthetic norms, and sociological and psychological parameters. This means identifying the relation of the uniformed person to the uniform as well as their relationship to those around them in their environment.

The renewal of image has allowed creativity in design and the opportunity to make coordinating combinations of separate pieces of clothing. The focus on the creative solution is exemplified by the theme of vertical lines, symbolising open borders. This detail makes the corporate image recognisable. We have chosen the vertical band or cutting which represents a raised border ramp and therefore symbolic open borders. This detail is included in all pieces and is adapted to the functionality of each garment.

The multifunctional clothes system makes it possible to put together simple combinations of the individual clothes depending on the weather conditions. This system is defined by and made from fabrics that are breathable and have other properties: transport of the moisture from the skin, water repellent and waterproof surfaces, and soft, very light and warm fabric (for the detachable jacket). With the addition of, and taking away, individual pieces, the body can function normally in different weather conditions.

The garments can be worn in different combinations depending on the necessities of function. The multifunctional winter waterproof jacket could be worn with the detachable warm jacket, the wind jacket, the pullover, polo shirt and functional undergarments. Depending on weather conditions, the detachable jacket can be taken off with or without the wind stopper. The clothes can be taken off layer by layer. That is the reason that we describe the symbolic “onion” way of dressing. Each layer of the clothes in different combinations offers the best proportion among functionality, comfort and endurance. It is the consequence of excellent functional fabrics and technology in production relating to the purpose of the clothing. Besides giving an assurance of the functionality, the main aim
is to use quality materials which offer very high endurance and assure supplementary functions. Design and choice of the material are the key factors for a successful product [10]. With a combination of models that have several different possibilities of wearing, and high quality models, endurance is increased and, moreover, the minimum required number of clothes is smaller, which reduces the cost for the customer.

We can protect against the cold by adding very light thermo insulation pieces, offering good heat isolation. These can be built into the wind jacket as a middle layer between the outside fabric and the lining. An even better solution is if the thermo insulation piece could be attached to the wind jacket and therefore detached from it if required.

Water resistant fabric was chosen for the waterproof winter jacket, which demanded the special technology of welded seams. This made it impossible for water to seep inside the jacket. The chosen material requires fabrics which breathe during exertion and allow sweat to evaporate easily. At the same time, the fabric cannot allow the water to penetrate inside the clothes. The waterproof winter jacket with these properties is indicated in Figures 1 to 5.

Figure 1. The sketch of woman’s waterproof winter jacket: the front

Figure 2. The sketch of the front of the men’s waterproof winter jacket: variations left: reflective details and a hood are hidden (the sketch in the front), and on the right side: the hood and reflective details on the bottom are visible (the sketch in the back)

Figure 3. The sketch of the back of the men’s waterproof winter jacket: variations left: the hood and reflective details on the bottom and on the back of the model are visible (the sketch in the front), on the right side: reflective details, the inscription and a hood are hidden (the sketch in the back)

Figure 4. The sketch of the inner workmanship of the men’s waterproof winter jacket with details of the buttoning of reflective bands on the bottom

Figure 5. The sketch of the detachable jacket
The winter jacket is offered in two variations of design, both of which are waterproof. The first one is described above and earmarked for every day wearing. It is made with reflective silver bands that can be detached from the inside of the bottom of wind jacket, or can be hidden when they are not necessary. The same concept is demonstrated in the reflective band with the inscription CARINA, which can be visible or zipped in the back pocket. Another model which is not the object of the questionnaire (only nine models had been produced) is made from high visibility (fluorescent) material for the purpose of easier observation in the streets. It is made in accordance with standards (EN 471) and, of course, equipped with reflective silver bands.

**Presentation of the model multifunctional waterproof wind jacket**

In the following part of this article, the results of the questionnaire regarding wearing the waterproof winter jacket are presented. First, let us examine the sketches of women’s and men’s models, where all variable details and the detachable jacket are visible.

**Results of the questionnaire and analysis of the gathered information**

On the basis of the confirmed concept, prototypes and documentation, the tender for production of the commercially produced clothes was released. The first order was the winter jacket; the manufactured quantity was 742 pieces. The recipient took delivery of the garments in autumn 2010. The winter jackets were worn for the first time in winter 2010/2011. The first evaluation has been made with the help of a questionnaire [11] that was produced by experts at the CARS in summer 2011, after the first period of wearing.

The questionnaire was published through the intranet website of the CARS. Everyone who worse the new uniform had the option to answer the questions. From 742 receivers of the design there were 309 responses from 12 organisational units from all over Slovenia (Brežice, Celje, Dravograd, Jesenice, Koper, Ljubljana, Maribor, Murska Sobota, Nova Gorica, Sežana and Generalni carinski urad).

The questionnaire was completed after more than three months of wearing the garments. In all, 72% of the people questioned had worn the uniform more than three months, 20% between one and three months, and 5% wore it less than one month. Several of them did not wear the model. The duration of wear was quite short, and the wind jacket was not tested in all weather conditions. Moreover, in the different regions of Slovenia there were very different weather conditions and so all of the respondents could not evaluate the uniform in extreme conditions.

The questionnaire was intended to acquire information about contentment levels in employees regarding the pattern, fabric, comfort and maintenance of the new Customs Service uniform. These questions are important for future development and improvement of the design, building on the first delivery of garments.

**Analysis of answers about the pattern of the winter jacket**

From the answers we can see that the majority is satisfied with the pattern (Figure 6), as well as with the length (69%). I am worried about the data suggesting the jacket is too short (21%). I suppose it is owing to the previous model, which users were used to wearing. That old model was not a functional pattern and out-of-date, including the longer length. The new, shorter model is designed according to contemporary trends and visual aesthetic norms. Each measurement was individual, taking into account the prescribed guidelines. The assumption is that the answers reflect the individual feelings of the wearers who have their own ideas about how a uniform should be. We could avoid this kind of response with a better presentation of the new uniform to the wearers, including information on purpose, novelty and characteristics related to corporate identity. We could warn wearers about differences in style, as well as other changes which might concern them, and explain the reasoning.

The detail of the zip fastening of the piece is subordinate to the function. It has to be waterproof. The detail is mostly concerned with function, and this is what should be considered. Buttoning with press studs is hidden because of the visual image presented.

The communication power of the model is strong (Figure 7), which is confirmed in answers connected to the identifying of the winter jacket. Satisfaction is evident from the high percentage of 90% of positive answers. Certainly, identification

![Figure 6](http://www.autexj.com/)

![Figure 7](http://www.autexj.com/)
of the model is the key factor that has to be considered in all uniform designs.

Analysis of answers about fabric of the winter jacket

The fabric of the winter jacket was assessed at the highest rating “very content”. The remaining 32% of people questioned answered with the next highest rating (4). We can see from the results (Figure 8) that the chosen material is satisfactory. Similar results are valid for the material used for the detachable warm jacket. The colour of the jacket is according with the European direction of customs. In all, 89% of answers rated this from 3 to 5. They are content with the chosen colour. Employees have been wearing the green colour (another shade) before, and so it was not a big difference. However, the new colour is more contemporary than the previous one.

Analysis of answers about the feeling of wearing the winter jacket

The new winter jacket was worn for more than three months by 72%. In all, 19% had worn it for between one and three months. This indicates that the model was not tested in all weather conditions. The winter jacket was worn from autumn 2010 to spring 2011. How long individuals were wearing the jacket depends on the nature of the duties of the individuals and what part of Slovenia they were in. The questionnaire was released in the May of 2011. Important parameters, which impact uniform, are design, patterns and fabric, quality of making and functionality of the model, which influence the feeling of wearing the uniform for work. From the ratings in the questionnaire it is evident that 68% of people are content or very content with the ability of moving and working in the uniform. The next 21% of respondents to this question gave a score of 3. Otherwise, the wearing of the winter jacket was very well rated for wearing under 0°C, and in the worst weather circumstances (rain, snow) (Figure 9); meanwhile, in up to 15°C or more the model could be replaced by another model (wind jacket), which is also as part of the uniform. All people questioned who were not able to wear the model in harsher weather conditions were not able to answer this question (18%).

Analysis of answers about the practicability of separate parts of the winter jacket

The detachable warm jacket is an important part of the winter jacket. Regarding the question of the jacket worn together with the detachable warm jacket we can see that in most of the answers, the model is worn periodically with or without the detachable jacket. Some people (41%) had the detachable jacket all the time in the winter jacket or they wear without it (6%). The modular combination offers to the user adaptable wearing, depending on weather circumstances, which the majority of respondents make good use of. Probably, this result is (regarding ratings) because of practicability and the way of fastening the detachable warm jacket into the winter jacket.

That safety is very important is shown in the response to the reflective applications. The design has many reflective details; the majority of users are very content with these. They are also very content with the possibility of detaching the reflective bands from the inside of the bottom of the winter jacket. The results of the following questions, regarding how often they detach the reflective details from the bottom of the jacket, show that in 44% of cases they never detach it, or very rarely in 23%. From the written answers, it is evident that the detail is very handy, and so the wearers like the practicability of being able to remove the strips; however, we can see they admire it more than use it. It is evident as well the same is with the answer about practicability of the functionality of the reflective inscription CARINA (Customs), which is mostly rated with the rating 4 or 5, but at the same time they use it rarely (20%), very rarely (19%) or never (49%).

The practicability of the pockets in mostly rated as good. Through the descriptive question we obtain the answer that in the women’s model they describe the pocket as ‘clumsy’. After analysing the results we changed the form, which is simpler to use now. We did not change the visual line, but only the pattern and technology of making. It is interesting that in spite of elegant detail the special pocket was not accepted for reasons of functionality.

Functionality at the sleeve that could be adapted with a band is valued with the score 3, 4 and 5. The hood, though an important functional element, is rarely used (33%), very rarely used (18%) or never used (39%). Only 2% of people use the hood very often and 6% often.

http://www.autexrj.com/
Analysis of answers about maintenance of the winter jacket

People who responded to this question noticed that the fabric is sensitive because of the smaller structure. Most of them estimate the sensitivity of material to stains and dirtiness with the rating of content (17%) or very content (43%).

The majority of people did not (47%) wash the model, 24% of them washed it once and some of them washed it more times. They decided to wash it in the washing machine (26%), which is possible because of technology and the materials used. In all, 21% others decided to take it to the dry cleaner. People who answered the question about the form of the model after cleaning note that the uniform is good and are, after washing, content. I estimate it is important to have the possibility of cleaning the garment in the washing machine at home. Maybe in the next delivery the design could incorporate more information about maintenance.

Resume of results

The results of the questionnaire mostly (75%) confirm the correctness of the guidelines in designing the new winter jacket. From the answers we could comprehend what the individual points of view are about the model. Patterns, fabrics, multifunctional concept, detachable warm jacket and many functional details were accepted positively by the respondents from both points of view – practicality and functionality. It is evident that the visual perception of the uniforms connected to the recognition of the model is very good. In the questionnaire a few comments were given that were not connected to the direct questions. They were given as propositions for improvements. All propositions have been studied in the work group for the new uniform and some of them are already taken into consideration in the release of new designs.

Conclusions

The article explains how to suggest the perfect balance of factors which influence the applicable and protective values of the uniform. Results of the questionnaire clearly show how important synergy is in design and technological knowledge. The volunteers indicated that most of them are happy with the pattern of the jacket, as well as with details, which provide enough functionality for comfortable wearing. There is also a connection between feeling in the model and the chosen material, which we can comprehend as well from results about included fabrics in the wind jacket, which is rated as very good. Employees can, through everyday wearing, test the functionality and the quality of clothes and footwear, and at the same time they can observe the reaction and response of society to the new uniform. Most of the volunteers indicated that the communication power of the model is strong. Satisfaction is evident from the high percentage of 90% of positive answers. Certainly, the identification of the model is the key factor that has to be considered in all uniform design.

With the help of the questionnaire, the cycle of development is closed and the efficiency of the model is measured in all parameters. From the evaluation of the information we can clearly comprehend what is important for users, what their relation is to the communication value of the model, and how functional the pattern is, including fabrics and their treatment. All these elements compose a total viewpoint estimation of the model and, at the same time, they present milestones from the starting point. This is important for the future improvements of Customs uniforms as well as for designing in general.

It is important to follow contemporary trends hand in hand with the development of technology, leading to a synergy with artistic and aesthetic standards to form a strong visual identity, embracing needs of functionality. Safety criteria concerned with the silhouette and the ergonomics of the garment in the workplace are taken into account by the adoption of appropriate fabrics.

The functional properties of uniforms, their protective role and, at the same time, the level of satisfaction are demands that are most frequently presented from the point of view of the customer. It was the same in my case in the design of the corporate identity of clothes for the employees at Customs Administration of the Republic of Slovenia. Regarding the results of the questionnaire, the multifunctional waterproof winter jacket satisfied the tastes and needs of users. Many answers confirm that the correct approach was chosen. Some of them indicate guidelines for further development and even better functional and visual solutions in the future.

Acknowledgement

All results and graphs are the property of Customs Administration of the Republic of Slovenia. I have obtained permission to use them for scientific purposes.

Sketches: archives Studio design Sonja Šterman, designed for the customer Customs Administration of the Republic of Slovenia.

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