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Professionally Important Qualities of the Specialists in Design, Technology, and Service in the Postmodern Society

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Abstract: The purpose of the research is to identify professionally important qualities of the specialists in design, technology, and service, in particular cutters in the postmodern society.

At the first stage, a preliminary list of 39 professionally important qualities of the skilled workers in the fashion industry has been formulated by means of theoretical analysis. The list considers the specifics of the cutter's work at the intersection of three industries – design, technology, and service.

At the second stage, a priori ranking of factors has been conducted by interviewing 5 experts. The list, reduced after a priori ranking, has become a basis for surveying 246 respondents from different groups of stakeholders (teachers, students, graduates of vocational schools, employers' representatives) at the third stage.

As a result, the lists of input parameters of the model of specialist, which are professionally important qualities of the skilled cutters, are obtained. The lists contain 28 professionally important personal qualities, which are grouped into the following groups: executive and motor manifestations, cognitive processes, memory and thinking, emotions, business qualities, creative features, specific requirements.

The obtained results make it possible to develop optimal prognostic models of training the skilled workers in the fashion industry, as well as to conduct a scientifically grounded selection of personnel and career counseling.

Keywords: *professionally important qualities; specialists in design, technology, and service; cutter; vocational school; fashion industry; postmodern society.*

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1. Introduction

In postmodern world, the rapid development of consumer demand for the fashion industry products and the development of *fast fashion* have led to increased demand of the employers for the fashion industry professionals of all levels – from the skilled workers to engineers and designers. In this regard, the subject of current interest is to develop and implement the models of training the specialists for the performance of their professional tasks in a modern and predictable production environment. An important point is the assertion of Bekh et al. (2020) that the postmodern methodology of cognition is aimed at solving the problems of a particular person who is distinguished by "humanity", "reality" of thought.

The profession of the Cutter occupies a special place in the fashion industry because in the system of individual production of the clothes it is the cutter who performs the functions that are as close as possible to the responsibilities of a fashion designer. The cutter communicates with the customer, discusses the design of the product, measures the customer's figure, makes the patterns of the products, and cuts the garment using a manual or mechanized tool, or an automatized cutting system. Then he conducts fitting and adjusts the parameters of the product according to the customer's figure. In a small enterprise, the cutter participates in the manufacture of the garment using the sewing equipment and tools, i.e. performs the functions of a tailor-cutter. It should be noted that according to the standards of vocational education in Ukraine, it is necessary to have a qualification not lower than the third category in a related profession of the fashion industry (seamstress, tailor) to study the profession of a Cutter. When determining the initial parameters of the model of training, it is necessary to list the specialist's qualities necessary for successful professional activity. In the psychology of professional aptitude, the concept of 'professionally important qualities' of the stakeholder is distinguished. It means a set of 'psychological qualities of personality, as well as a set of physical, anthropometric, physiological characteristics of a human that determine the success of learning and real activities' (Bodrov, 2001, p. 53). A grounded list of professionally important qualities allows, on the one hand, a person to choose the optimal profession, and on the other hand, the employer to recruit the optimal staff who have all necessary personal qualities for this profession. That is why the research is aimed at identifying professionally important qualities of the cutters.

2. Literature review

The history of psychology of work has a lot of studies aimed at identifying the criteria that take into account the correspondence of personality and profession as much as possible and determine the professional aptitude. The first work in the history of psychology, the task of which was to study the individual differences in abilities for professional selection, was a book written by Juan Huarte (1960), Spanish physician. Huarte considered that imagination (fantasy), memory, and intellect are the main abilities.

The author of the first works on determination of professional aptitude is considered to be Hugo Münsterberg (1913, pp. 23-24). He showed that the best way to increase productivity is to answer three questions. Firstly, how to find a person whose mental qualities make him the most suitable for a particular job; secondly, under what psychological conditions we can choose the best job for every person; and finally, how we can influence human consciousness for business reasons. The importance of the optimal coordination of a person and work is emphasized in the article (Mensah & Bawole, 2017). The paper by Rohrbach-Schmidt and Tiemann (2016) examines the problem of failures in the profession in Germany, with the mismatch of not only the education but also the skills of the worker and the skill requirements of the job. The article Rodrigues et al. (2020) uses the example of ballet dancers to show how the optimal interaction of the requirements, abilities, and needs contributes to the process of adaptation at the workplace throughout life. The study of Hanna and Rounds (2020) found that interest inventories play an important role in predicting career choices. The article by Schmidt and Hunter (2004) argues that general mental ability most reliably predicts the effectiveness of the chosen profession, and does it better than any other abilities, features, or aptitudes. The results of the study by Ziegler et al. (2011), confirm the importance of general mental abilities for predicting the success of vocational training, taking that the specific abilities can be used as valuable additions.

The authors of the article Schlegel and Mortillaro (2019) consider that emotional intelligence is a predictor of working criteria. The paper contains the Geneva test for emotional competence at the workplace, which measures 4 components of emotional intelligence: recognition of emotions, understanding of emotions, regulation of emotions inside, and management of emotions in others.

The review article by Fernández-Martín et al. (2020) concludes that the strong nature is a predictor of educational and professional success.

The classification proposed by Paterson et al. (1953) is based on 7 different abilities. Using the «Minnesota Occupational Rating Scale» (MORS), 432 professions, selected by psychologists and experts in professions, were divided into the following seven groups: academic, mechanical, social, clerical, musical, artistic, and physical. The classification developed by Paterson et al. (1953) contains several professions of the fashion industry: from high-skilled specialists (for example, process engineer) to a seamstress's assistant. Having analyzed the mentioned classification, it can be noted that the author has set high requirements for the level of academic and mechanical abilities of the workers in the fashion industry, which are increased for the professionals-technologists (AA), craftsmen, and designers (BB). For the skilled workers, in particular seamstresses and tailors, these requirements are medium (CC). Artistic abilities are important for designers of the clothes (B) and seamstresses (C). For other professions, the minimum level (D) is sufficient. According to Paterson's classification, social abilities are important for craftsman (B), designer of high-quality clothes, and skilled seamstress (C). For other professions, the minimum level (D) is set. Such an approach is quite controversial, as the work of a tailor and a cutter provides for communication with the customers; therefore, it is wrong to expect success in the absence of social skills of such workers. However, the consideration of academic and mechanical abilities in the selection and training of the skilled workers in the fashion industry is still relevant.

Numerous modern publications are known, aimed at establishing the criteria that take into account the correspondence of personality and profession as much as possible and determine the so-called professional aptitude. These are the works of psychologists of work, teachers, sociologists. The importance of applying the psychology of working framework/theory to develop new models of career education is explained in the article (Kenny et al., 2019).

A comparative analysis of models of training the skilled workers in the fashion industry in several countries is conducted in the article by Yezhova et al. (2018). It is important to conclude that in the countries-legislators of fashion, education is aimed at the development of student's creative and business competencies, and in the countries-manufacturers – at the development of engineering competencies. Of interest is the 'Clothing Fashion Design assessment instrument', presented in the article (Kamis et al., 2013). The importance of self-education in the training and retraining of designers is emphasized in the article (Pashkevich et al., 2020).

The article by Alpak et al. (2019) is devoted to the formation of such a professionally important quality as multi-dimensional thinking of the future designers of urban space.

The results of the study of phantasia, conducted by Zeman et al. (2020), indicate that in respondents' minds 'aphantasia is associated with scientific and mathematical occupations, whereas hyperphantasia is associated with 'creative' professions'.

The research by Mao and Shen (2020) is of interest because it is aimed at using the artist's identity for a successful career in the field of creative industries.

The study by Yan (2018) reveals a direct relationship between the level of development of creative abilities with such personality traits as sociability, reactive aggression, masculinity, mobility, and strength of the nervous system. Research by Tsai (2018) shows the correlation between cognitive style, creativity, and the appreciation of creative products in the case of Macau art and design undergraduates.

The study by Kuruganti and Rickards (2004) examines tests used by firefighters, police, and armed forces to determine their compliance with the requirements for psychomotor and physiological abilities.

The study of the competencies needed by the professionals in quality management to meet the needs of industry 4.0, which is conducted by Kannan and Garad (2020) in Malaysia, is also of interest. As a result, it is found that industry 4.0 will need the following competencies: technical, methodological, social, and personal competencies.

As a result of the research of Awan and Ameen (2020), it is found that work coordination, leadership, trustworthiness are one of the main competencies needed by information professionals.

The study of Meilani and Rosmawati (2019) emphasizes the importance of such soft skills as self-responsibility and confidence, which is confirmed by a survey of the students at Indonesian vocational high school.

The article by Semrad et al. (2019) summarizes the characteristics that can be considered to identify people who can effectively deceive to perform professional tasks.

The results of the study, conducted by Anell et al. (2018) among police officers in Sweden showed that in the prediction of results, the psychosocial working conditions were more important than selection factors, in particular: job satisfaction, behavior, professional activity, and health.

The conclusion of Ubalde and Alarcón (2020) that in the areas where the low-paid women's work is used (for example, service), communication

skills and knowledge of the foreign language are currently underestimated, is quite important.

To determine the personality traits inherent to the workers in the fashion industry, the Theory of Career Choice by Holland (1966) has been used, according to which all people are fit into one of six personality types: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C).

At first glance, the professions of the fashion industry belong to the so-called 'realistic' type, as they are related to technology and aimed at solving specific problems in the manufacture of material items – garments. According to Holland's theory, people who choose such professions should have the following personality traits and abilities: activeness; busyness; persistence; rationality; practical thinking; coordination; spatial dexterity; technical abilities. However, in the field of service, communication with the customer is an integral part of the cutter's professional activity. Thus, this profession can be attributed to the 'social' type at the same time. Therefore, the representatives of this profession should have such qualities as the ability to communicate; humanity; adaptiveness; solving problems based on emotions and feelings; language skills.

The classification of professions presented by Klimov (2004, p. 160), an academician, is considered classic and created for information support of professional self-determination of youth. He developed a four-tier classification based on four features: characteristics of the subject, goals, means, and working conditions. It should be noted that the profession of the Cutter provides for the work at the intersection of three areas – design, technology, and service. According to this classification, the working professions of the fashion industry belong to the 'human-technics and inanimate nature (I)' type. However, the professional responsibilities of the Cutter include communication with the customer during the discussion of the model, measurement of dimensions, fitting. Thus, this profession has features inherent to the 'human-human (H)' type. It also should be noted that when creating a new design of the clothes that differ significantly from the typical design and decorative solutions, the Cutter acts as an artist, and his activity can be classified as of 'human-artistic image (A)' type.

Depending on the goals of the activity, Klimov (2004, p. 162) identifies three classes of professions within each type at the second level of classification: gnostic (G), aimed at recognizing the already known; transformative (T), aimed at transforming the existing or searching for the unknown; research (R), aimed at solving non-standard problems.

According to this level of classification, the professions of seamstress and tailor can be attributed to the Transformative (T) class, and the profession of the Cutter – to the Research (R) class.

Analyzing the professions of the fashion industry in the context of their classification by means of labor, it is stated that the existing model of the organization of garment production provides for equipping the workplace of the cutter to perform a specific operation rather than the profession. Depending on the installed equipment and the characteristics of a particular model, workers can perform operations using manual tools (T), sewing and cutting machines (M), and semi-automatic machines (A).

In the case of correct organization of workplaces and introduction of systems of microclimate control (heating, ventilation, etc.), the workers in the fashion industry work in the microclimate conditions close to household ones.

In summarizing the conducted analysis of research in the field of psychology of work, professional suitability, and professional self-identification, a preliminary list of professionally important qualities of the skilled workers in the fashion industry is compiled (see table 1). The list includes personality traits that ensure the success of work in the 'human-technics' system, the implementation of creative and searching tasks, the communication with people – both colleagues and customers, and the performance of operate functions.

Thus, the research in the field of psychology of work has been studied and the preliminary list of 39 professionally important qualities of the skilled workers in the fashion industry has been formulated. The resulting list is cumbersome for practical application and therefore revised at the subsequent stages of research by methods of a priori ranking of factors and questionnaires of different groups of respondents.

3. Methodology

The purpose of the research is to substantiate the list of professionally important qualities for the profession 'tailor-cutter'.

The research was conducted in four stages during 2016-2020. At the first stage, the analysis of the profession *Cutter* has been carried out, the scientific research in the field of psychology of work has been studied, and the preliminary list of 39 professionally important qualities of the skilled workers in the fashion industry has been formulated. At the second stage, a priori ranking of factors has been conducted to reduce the list and single out the most important professionally important qualities of the Cutter according to the experts. The list, reduced after a priori ranking, has become a basis for surveying a wide range of stakeholders at the third stage –

students and teachers at vocational schools, graduates, and employers. At the final, fourth stage, the statistical analysis and interpretation of the results of experimental research have been carried out.

Sample Selection and Data Collection Procedure

3.1. A Priori Ranking of Factors

The expert group. The expert group includes highly qualified specialists in the fashion industry and vocational education. All experts have education at the university level, technical or pedagogical, and three experts have two educations at the university level. All professionals have a working profession and experience in the fashion industry from 5 to 26 years. The total work experience of each expert in the fashion industry and in educational institutions, where the specialists in design, technology, and service are trained, is from 22 to 32 years.

Methods of conducting an expert survey. The list formed as a result of the analysis of scientific publications includes 39 personality qualities, conditionally grouped into 7 groups. As such, it is too cumbersome for practical use. Not all these qualities are really important for the skilled workers in the fashion industry. To select the most significant personality traits, a psychological experiment was conducted by the method of a priori ranking of factors. The method is based on the known methods of rank correlation and consists in the fact that the factors, which according to a priori information can have a significant impact, are ranked in descending order of their weight (Tihomirov, 1974, pp. 42-45). In this research, the method of a priori ranking of factors is implemented by interviewing the experts. The method of a priori ranking of factors by interviewing the experts consists in that each factor is assigned a rank – a place that, according to the expert, this factor occupies among other factors in influencing the optimization parameter. In each group, the leading factor is assigned rank 1, the next one is assigned rank 2, and so on. If the factors are considered to be equally significant, they are assigned the same rank, which is equal to the arithmetic mean of the predicted ranks. For example, if the factors with the ranks 3 and 4 are equally important, they are assigned a rank 3.5. In this case, the next factor is assigned a rank 5.

Each expert filled out a questionnaire that has the following elements:

- introduction;
- requisites;
- informative part;
- classification part;

- final part.

Data Analysis Method

The results of a priori ranking are processed using the methods of mathematical statistics.

The results of the survey are processed in accordance with (Tihomirov, 1974, pp. 42-45). First, the sum of ranks by factors is calculated; then the difference (Δi) between the sum of each factor and the average sum of ranks is calculated by the formula (1):

$$\Delta i = \sum_1^m a_{ij} - \frac{\sum_1^k \sum_1^m a_{ij}}{k} = \sum_1^m a_{ij} - T \tag{1}$$

;

where a_{ij} is the rank of i -th factor assigned by the j -th expert;
 m is the number of experts;
 k is the number of factors;
 T is the average sum of ranks.

The sum of the squares of deviations (s) is determined by the formula (2):

$$s = \sum_1^m (\Delta i)^2 \tag{2}$$

The degree of experts` consistency is determined using the concordance coefficient w by the formula (3) (Table 1):

$$w = \frac{12s}{m^2(k^3 - k) - m \sum_1^m T_j} \tag{3}$$

where $T_j = \sum (t_j^3 - t_j)$; t_j is the number of identical ranks in the j -th ranking.

The value of the concordance coefficient $w = 0$ means complete disagreement of the experts, and $w = 1$ means complete unanimity of the experts.

To assess the significance of the concordance coefficient, the criteria χ^2 are determined by the formula (4) (Table 1):

$$\chi^2 = m(k - 1)w \tag{4}$$

The criteria χ^2 that obtained as a result of calculations are compared with the table values of the distribution χ^2 with the number of degrees of freedom $f = k - 1$ at the levels of significance $\alpha = 0.01$; $\alpha = 0.05$ (Table 1).

In cases where the obtained value χ^2 is less than the corresponding table value for $\alpha = 0.05$, it is compared with the table value for $\alpha = 0.1$.

Factors that received the lowest rank according to the results of ranking (were gained the highest amount of ranks) can be excluded from further research as the least significant according to the experts.

As a result of a priori ranking, 6 factors that received the lowest rank for all four professions are removed from the list of professionally important qualities of the skilled workers in the fashion industry.

To present the final list of professionally important qualities of future cutters, the method of the questionnaire is chosen.

3.2. Questionnaire of Stakeholders

The group of respondents. The survey was conducted during 2018-2020. The examples of questionnaires for students and educationalists were sent to the regional educational and methodical centers of vocational education. Representatives of four groups of respondents took part in the survey: teachers at vocational schools, students at vocational schools, graduates of vocational schools, representatives of employers.

Representatives of 26 vocational schools of different types from five regions of Ukraine, 99 students and 119 educationalists in total, took part in the survey voluntarily. Students are 17-25 years old, all of them have the qualification of a tailor or a seamstress of 3-4 category and continue their studies in the profession of the Cutter. Educationalists teach disciplines related to technology and design in the fashion industry in vocational education institutions. Also, 14 representatives of employers were interviewed – technologists and designers of 7 companies in the fashion industry, as well as 14 graduates who recently graduated from vocational schools, have a profession of Cutter, and have been with these companies for 1-4 years.

The questionnaires are based on the results of an a priori ranking of factors. According to the methodology of psychological and pedagogical research, the appropriate scale of estimates is included in the formulation of questions in the questionnaire. For each factor, the respondents were asked to indicate its importance for professional activities. The importance of each individual feature is assessed on a 3-point scale: 3 – very important, 2 – important, 1 – not important. To identify the qualities that do not affect the

success of the professional activity and even hinder it, the position ‘0 – unnecessary’ is added to the scale.

As in a priori ranking of factors, the questionnaire included the following elements: introduction; requisites; informative part; classification part; final part.

Data Analysis Method

According to the results of the survey, the indicators related to descriptive and indicative statistics are identified.

Averages. The processing of the survey results is performed using the method described in (Tihomirov, 1974, pp. 34-42). For each factor, the frequency of estimates (0, 1, 2, 3) in each group of respondents and the total frequency for all groups are determined.

For each factor, the arithmetic mean of its importance x_c is determined by the formula (5) (Tihomirov, 1974, p. 36) as the sum of all values of the factor divided by their number.

$$x_c = \frac{1}{n} \sum_{i=1}^n x_i, \tag{5}$$

where x_i is the value of the factor in the i -th questionnaire,
 n is the number of questionnaires.

Data deviation from the average. To estimate the data concentration around the mean values, the standard deviations σ are determined by the formula (6).

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - x_c)^2} \tag{6}$$

Next, the indicators related to inductive statistics are identified. Inductive statistics is needed to test whether the results obtained in the sample can be extended to the entire population from which the sample was taken. It is necessary at the stage of generalization and construction of conclusions.

Inaccuracies (errors). To assess the reliability of the survey results and determine the statistical errors by the formulas (7) and (8), the following indicators are determined for each factor: the arithmetic mean error $m(x_c)$:

$$m(x_c) = \frac{\sigma}{\sqrt{n}} \tag{7}$$

The standard deviation error $m(\sigma)$ is:

$$m(\sigma) = \frac{\sigma}{\sqrt{2n}} \tag{8}$$

The accuracy index P is determined by the formula (9):

$$P = m(x_i) \times 100\% / x_i \quad (9)$$

where x_i is an arithmetic mean of the importance of the factor;
 $m(x_i)$ is the arithmetic mean error.

4. Research Results

The results of a priori ranking of factors are summarized in Table 1. For each factor within the group, the final rank is determined. The most important factor, which gained the lowest amount of ranks, has the final rank 1, followed by the rank 2, etc. For each group of factors, the level of confidence probability is indicated; considering such a level, it can be stated that the opinion of the experts is consistent. The factors that can be excluded from further study as insignificant ones are highlighted in the table.

Summing up the results of a priori ranking, it can be noted that the experts unanimously gave a low rank to the following factors:

- x1.3 Presence of numerous motor skills;
- x4.2 Stability in emergencies;
- x5.4 Humaneness;
- x5.13 Ability to repeatedly process what has been done;
- x6.6 Sense of beauty;
- x7.3 Ability to perform emergency actions.

This made it possible to exclude the abovementioned factors from the model of the specialist and further research.

Table 1. Final ranks of the factors for identification of the most significant and professionally important qualities for the profession ‘Cutter’

Factor code	Professionally important qualities	Final rank	w	χ^2	χ^2 at $\alpha=0.01$	χ^2 at $\alpha=0.05$
1. Executive and motor manifestations						
x1.1	Accuracy and speed of movements, mostly small	2				
x1.2	Coordination and thoughtfulness of movements	1				
x1.3	<u>Presence of numerous motor skills</u>	<u>3</u>				
	Level of confidence probability	0.95	0.76	7.60	9.20	5.99
2. Cognitive processes						

Factor code	Professionally important qualities	Final rank	w	χ^2	χ^2 at $\alpha=0.01$	χ^2 at $\alpha=0.05$
x2.1	<i>Requirements for attention, its concentration, distribution, switching</i>	1				
x2.2	High requirements for visual acuity	<u>5</u>				
x2.3	Developed perception of color	3				
x2.4	Eye estimation	2				
x2.5	Requirements for touch sensations and muscle sensitivity	4				
	Level of confidence probability	0.9	0.46	9.14	13.30	9.50
3. Memory and thinking						
x3.1	Severe requirements for memory and thinking	3				
x3.2	Good short-term memory and thinking	<u>4</u>				
x3.3	Spatial representation	1				
x3.4	Practical thinking	2				
	Level of confidence probability	0.95	0.72	10.84	11.30	7.80
4. Emotions						
x4.1	Emotional restraint	2				
x4.2	<u>Stability in emergencies</u>	<u>3</u>				
x4.3	Increased sense of responsibility	1				
	Level of confidence probability	0.9	0.52	5.20	9.20	5.99
5. Business qualities and attitudes of the individual (to others, to work, to things, to oneself)						
x5.1	Ability to work independently and in a team	4				
x5.2	Ability to communicate	1				
x5.3	Language skills	2				
x5.4	<u>Humaneness</u>	<u>13</u>				
x5.5	Accuracy	8				

Factor code	Professionally important qualities	Final rank	w	χ^2	χ^2 at $\alpha=0.01$	χ^2 at $\alpha=0.05$
x5.6	Desire to improve knowledge and skills	3				
x5.7	Conscientiousness	6				
x5.8	Rationality	10				
x5.9	Technical abilities	9				
x5.10	Discipline	5				
x5.11	Concentration	7				
x5.12	Patience	<u>11</u>				
x5.13	<u>Ability to repeatedly process what has been done</u>	<u>12</u>				
	Level of confidence probability	0.99	0.58	34.75	26.20	21.00
6. Creative features						
x6.1	Imagination	<u>5</u>				
x6.2	Sense of aesthetics	4				
x6.3	Fresh thinking	2				
x6.4	Fantasy	3				
x6.5	Flexibility of thinking	<u>6</u>				
x6.6	<u>Sense of beauty</u>	<u>7</u>				
x6.7	Interest in fashion	1				
	Level of confidence probability	0.99	0.69	20.61	16.80	12.60
7. Specific requirements						
x7.1	Physical endurance when working at individual workplaces (for example, launching, packaging, especially products of the coat-and-suit range)	<u>4</u>				
x7.2	Absolute infallibility of actions	1				
x7.3	<u>Ability to perform emergency actions</u>	<u>3</u>				
x7.4	High personal responsibility for the	2				

Factor code	Professionally important qualities	Final rank	w	χ^2	χ^2 at $\alpha=0.01$	χ^2 at $\alpha=0.05$
	actions (system management)					
	Level of confidence probability	0.95	0.52	7.75	11.30	7.80
Groups of professionally important qualities						
x0.1	Executive and motor manifestations	4				
x0.2	Cognitive processes	2				
x0.3	Memory and thinking	3				
x0.4	Emotions: emotional restraint	6				
x0.5	Business qualities and attitudes of the individual (to others, to work, to things, to oneself)	5				
x0.6	Creative features	1				
x0.7	Specific requirements	7				
	Level of confidence probability	0.99	0.59	17.76	16.80	12.60

Table 2 presents the results of a survey of four groups of respondents. Professionally important qualities are arranged in descending order of average importance, from the most important to the least important qualities. As can be seen from Table 2, according to the results of the questionnaire survey, it is concluded that *the desire to improve knowledge and skills* and *the fantasy* are the most important for the cutter, while *the physical endurance* and *the requirements for touch sensations and muscle sensitivity* are the least important. The accuracy index did not exceed 3%, which confirms the validity of the obtained data.

Table 2. The statistics of estimates of the importance factors for the profession ‘Cutter’
(N = 246)

Factor or Professionally important quality	Total estimates				Estimates in %				Statistical indicators			
	0	1	2	3	0	1	2	3	x_c	σ	$m(x_c)$	$m(\sigma)$
Included in the model of the specialist												

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Fact or	Professionally important quality	Total estimates				Estimates in %				Statistical indicators				
		0	1	2	3	0	1	2	3	x_c	σ	$m(x_c)$	$m(\sigma)$	P, %
1	Desire to improve knowledge and skills	0	42	99	105	0	1	13	87	2.86	0.37	0.02	0.02	0.83
2	Fantasy	0	5	79	162	0	0	14	86	2.86	0.35	0.02	0.02	0.78
3	Sense of responsibility	0	1	52	193	0	0	16	84	2.84	0.37	0.02	0.02	0.82
4	Ability to work independently and in a team	0	3	66	177	0	2	17	81	2.80	0.44	0.03	0.02	1.01
5	Ability to communicate	0	11	45	190	1	2	15	83	2.80	0.49	0.03	0.02	1.12
6	Developed perception of color	0	3	59	184	0	4	15	81	2.78	0.50	0.03	0.02	1.14
7	Imagination	0	3	59	184	0	0	21	78	2.78	0.42	0.03	0.02	0.97
8	Requirements for memory and thinking	0	5	79	162	0	1	21	78	2.77	0.44	0.03	0.02	1.01
9	Spatial representation	0	1	76	169	0	0	23	76	2.76	0.44	0.03	0.02	1.01
10	Practical thinking	0	1	68	177	0	1	24	75	2.74	0.45	0.03	0.02	1.06
11	Accuracy	0	9	80	157	0	1	24	75	2.74	0.47	0.03	0.02	1.09
12	Fresh thinking	0	11	71	164	0	4	18	77	2.73	0.54	0.03	0.02	1.25
13	Requirements for attention, its concentration, distribution, switching	2	4	36	204	0	1	27	72	2.72	0.47	0.03	0.02	1.10
14	Concentration	2	4	36	204	0	0	28	72	2.72	0.46	0.03	0.02	1.08
15	Eye estimation	0	2	31	213	0	0	28	72	2.71	0.46	0.03	0.02	1.09
16	Sense of aesthetics	0	2	31	213	0	1	27	72	2.71	0.48	0.03	0.02	1.13
17	Discipline	0	4	42	200	0	0	31	69	2.68	0.47	0.03	0.02	1.13

Fact or	Professionally important quality	Total estimates				Estimates in %				Statistical indicators				
		0	1	2	3	0	1	2	3	x_c	σ	$m(x_c)$	$m(\sigma)$	P, %
18	Patience	0	17	74	155	0	5	23	72	2.67	0.56	0.04	0.03	1.35
19	Rationality	0	52	50	144	0	2	32	66	2.64	0.52	0.03	0.02	1.26
20	Conscientiousness	0	3	100	143	0	4	29	67	2.62	0.57	0.04	0.03	1.39
21	Coordination and thoughtfulness of movements	0	4	42	200	0	3	33	64	2.61	0.54	0.03	0.02	1.33
22	Flexibility of thinking	0	3	100	143	0	4	33	64	2.60	0.56	0.04	0.03	1.37
23	Technical abilities	0	0	39	207	0	1	41	58	2.57	0.52	0.03	0.02	1.29
24	Absolute infallibility of actions	0	1	68	177	0	1	41	58	2.57	0.52	0.03	0.02	1.29
25	Language skills	0	0	35	211	0	7	30	63	2.56	0.62	0.04	0.03	1.54
26	Visual acuity	0	17	74	155	0	2	41	57	2.55	0.54	0.03	0.02	1.34
27	Short-term memory and thinking	0	3	100	143	0	10	25	65	2.55	0.67	0.04	0.03	1.68
28	Emotional restraint	0	12	57	177	1	7	29	63	2.54	0.67	0.04	0.03	1.67
Not included in the model of the specialist														
29	Accuracy and speed of movements, mostly small	0	0	39	207	0	2	52	46	2.44	0.54	0.03	0.02	1.40
30	Personal responsibility for the actions (system management)	0	12	57	177	0	21	20	59	2.37	0.81	0.05	0.04	2.18
31	Physical endurance when working at individual workplaces	0	1	76	169	0	17	40	43	2.26	0.73	0.05	0.03	2.06

Fact or	Professionally important quality	Total estimates				Estimates in %				Statistical indicators				
		0	1	2	3	0	1	2	3	x_c	σ	$m(x_c)$	$m(\sigma)$	P, %
32	Requirements for touch sensations and muscle sensitivity	0	11	71	164	1	19	43	37	2.17	0.75	0.05	0.03	2.22

As can be seen from Table 1, respondents gave many of the highest scores '3' to various factors; thus, we decided to include the factors with an average score of 2.5 and above to the model of the future cutter.

As a result, only four qualities were excluded from the general list of professionally important qualities.

Thus, as a result of a priori ranking of factors and questionnaires of four categories of respondents, the following personal qualities, which are the most important for the cutter, are identified, namely:

1. Executive and motor manifestations: coordination and thoughtfulness of movements.

2. Cognitive processes: requirements for attention, its concentration, distribution, switching; high requirements for visual acuity; developed perception of color; eye estimation.

3. Memory and thinking: severe requirements for memory and thinking; short-term memory and thinking; spatial representation; practical thinking.

4. Emotions: emotional restraint; sense of responsibility.

5. Business qualities and attitudes of the individual (to others, to work, to things, to oneself): the ability to work independently and in a team; ability to communicate; accuracy; the desire to improve knowledge and skills; conscientiousness; rationality; technical abilities; discipline; concentration; patience; language skills.

6. Creative features: interest in fashion; imagination; sense of aesthetics; fresh thinking; fantasy; flexibility of thinking.

7. Specific requirements: absolute infallibility of actions.

5. Discussions

The results of the study are mainly correlated with the results of the research conducted by scientists. The list of professionally important qualities includes the features of *man-man*, *man-technique*, and *man-artistic image* professions in accordance with the classification (Klimov, 2004).

The fact that as a result of the questionnaire, such professionally important quality as *fantasy* has the second most important place, confirmed the results of the research of Zeman et al. (2020), who discovered the importance of the fantasy for *creative* professions.

The high average score (2.77 of maximum 3) given by the respondents to the requirements for memory and thinking and thus confirms the statements of Schmidt and Hunter (2004) and Ziegler et al. (2011) on the importance of general mental abilities for predicting the success of vocational training.

Inclusion of such factor as *Coordination and thoughtfulness of movements* (2.61 points) in the final list is consistent with the conclusion of Kuruganti and Rickards (2004) on the importance of psychomotor ability in the professional selection for individual professions.

The scientific novelty of the research is that it presents a developed and scientifically grounded list of professionally important qualities of the cutter, considering the requirements put forth by the features of the profession at the intersection of design, technology, and service.

The obtained results make it possible to develop optimal prognostic models of training of the skilled workers in the fashion industry, as well as to conduct a scientifically grounded selection of personnel and career counseling. The list of professionally important qualities of the cutter will be useful in the selection of applicants for training at vocational schools, in the development of curricula for cutters' training, in decision-making on personnel management in the fashion industry.

6. Research limitations

The limitations of the study are related to its organization. At the stage of a priori ranking of factors on some issues, the agreement of experts was low or satisfactory. Taking that statistical methods do not provide clear recommendations on how many factors should be excluded, we were guided by the following recommendations.

1. If the experts' consistency by the concordance coefficient and its assessment by the χ^2 criterion can be assessed as satisfactory or high, the maximum number of factors with the lowest rank shall be excluded, but not more than half of the factors of the group, considering the uneven exponential reduction of distribution.

2. If the experts' consistency by the concordance coefficient and its assessment by the χ^2 criterion can be assessed as low, the minimum number of factors with the lowest rank shall be excluded, taking that none of the removed factors should receive the highest rank from any expert.

3. A larger (by percentage) number of factors can be excluded from the group that received the lowest rank compared to other groups.

4. Any doubts about the appropriateness of excluding a particular factor from the list are resolved towards clarification of its significance at the next stage of the research.

7. Conclusions

As a result of the analysis of literature sources, a priori ranking of factors and questionnaires, the lists of input parameters of the specialist model, which are professionally important qualities of the skilled cutters, are obtained. The lists contain the following groups of personal qualities: executive and motor manifestations, cognitive processes, memory and thinking, emotions, business qualities, creative features, specific requirements. In total, the model of the cutter contains 28 professionally important qualities.

1. Executive and motor manifestations: coordination and thoughtfulness of movements.

2. Cognitive processes: requirements for attention, its concentration, distribution, switching; high requirements for visual acuity; developed perception of color; eye estimation.

3. Memory and thinking: severe requirements for memory and thinking; short-term memory and thinking; spatial representation; practical thinking.

4. Emotions: emotional restraint; sense of responsibility.

5. Business qualities and attitudes of the individual (to others, to work, to things, to oneself): the ability to work independently and in a team; ability to communicate; accuracy; the desire to improve knowledge and skills; conscientiousness; rationality; technical abilities; discipline; concentration; patience; language skills.

6. Creative features: interest in fashion; imagination; sense of aesthetics; fresh thinking; fantasy; flexibility of thinking.

7. Specific requirements: absolute infallibility of actions.

The obtained results make it possible to develop optimal prognostic models of training the skilled workers for the fashion industry in postmodern society, as well as to conduct a scientifically grounded selection of personnel and career counseling.

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References

- Alpak, E. M., Düzenli, T. & Mumcu, S. (2019). Raising awareness of seating furniture design in landscape architecture education: physical, activity-use and meaning dimensions. *International Journal of Technology and Design Education*, 30(3), 587-611. <https://doi.org/10.1007/s10798-019-09514-8>
- Annell, S., Lindfors, P., Kecklund, G. & Sverke, M. (2018). Sustainable Recruitment: Individual Characteristics and Psychosocial Working Conditions Among Swedish Police Officers. *Nordic Journal of Working Life Studies*, 8(4), 3-24. <https://doi.org/10.18291/njwls.v8i4.111926>
- Awan, W. A., & Ameen, K. (2020). What do the business employers want? A sequential mixed methods exploration of information professionals' competencies. *Global Knowledge, Memory and Communication*, 68(8/9), 665-680. <https://doi.org/10.1108/GKMC-03-2020-0029>
- Bekh, V., Yaroshenko, A., Zhyzhko, T., Ignatyev, V., & Dodonov, R. (2020). Postmodern Picture of Reality of Scientific Knowledge: Evolution by Epistemological Diversity. *Postmodern Openings*, 11(3), 207-219. <https://doi.org/10.18662/po/11.3/208>
- Bodrov, V. A. (2001). *Psihologija professional'noj prigodnosti*. [Professional suitability psychology]. Per Sje.
- Fernández-Martín, F. D., Arco Tirado, J. L., & Hervás-Torres, M. (2020). Grit as a Predictor and Outcome of Educational, Professional, and Personal Success: A Systematic Review. *Psicología Educativa*, 26(2), 163-173. <https://doi.org/10.5093/psed2020a11>
- Hanna, A. & Rounds, J. (2020). How accurate are interest inventories? A quantitative review of career choice hit rates. *Psychological bulletin*, 146(9), 765-796. <https://doi.org/10.1037/bul0000269>
- Holland, J. L. (1966). *The Psychology of Vocational Choice: A theory of personality types and model environments*. Blisdell.
- Huarte, J. (1960). *Issledovanie sposobnostej k naukam* [The Examination of Men's Wits]. Izd. Akademii nauk SSSR. (Original work published 1575).

- Kamis, A., Bakar, A. R., Hamzah, R., Asimiran, S. A., & Halim, N. A. (2013). Competency assessment of clothing fashion design: rasch measurement model for construct validity and reliability. *Journal of Technical Education and Training*, 5(2), 1-13.
<https://publisher.uthm.edu.my/ojs/index.php/JTET/article/view/805>
- Kannan, K. S. P., & Garad, A. (2020). Competencies of quality professionals in the era of industry 4.0: a case study of electronics manufacturer from Malaysia. *International Journal of Quality and Reliability Management*, 38(3), 839-871.
<https://doi.org/10.1108/ijqrm-04-2019-0124>
- Kenny, M. E., Blustein, D. L., Liang, B., Klein, T. & Etchie, Q. (2019). Applying the psychology of working theory for transformative career education. *Journal of Career Development*, 46(6), 623-636.
<https://doi.org/10.1177/0894845319827655>
- Klimov, E. A. (2004). *Psihologija profesional'nogo samoopredelenija*. [Psychology of professional self-determination]. Akademija.
- Kuruganti, U., & Rickards, J. (2004). The role of human factors engineering in establishing occupational fitness standards. *International journal of industrial ergonomics*, 34(6), 451-457. <https://doi.org/10.1016/j.ergon.2004.05.004>
- Mao, J., & Shen, Y. (2020). Identity as career capital: enhancing employability in the creative industries and beyond. *Career Development International*, 25(2), 186-203. <https://doi.org/10.1108/CDI-01-2019-0025>
- Meilani, R. I., & Rosmawati, R. (2019). Prospective Workers' Self Responsibility and Confidence: A post-industrial work practice reflective study. In *1st International Conference on Economics, Business, Entrepreneurship, and Finance (ICEBEF 2018)*. Atlantis Press 65, 180-183.
<https://doi.org/10.2991/icebef-18.2019.43>
- Mensah, J. K., & Bawole, J. N. (2017). Person–job fit matters in parastatal institutions: Testing the mediating effect of person–job fit in the relationship between talent management and employee outcomes. *International Review of Administrative Sciences*, 86(3), 479-495.
<https://doi.org/10.1177/0020852317704501>
- Münsterberg, H. (1913). *Psychology and Industrial Efficiency*. Houghton Mifflin Company.
- Pashkevich, K., Yezhova, O., & Gerasymenko, O. (2020). Use of information and communication technologies for organizing self-education of personality in the field of clothes design. *Information Technologies and Learning Tools*, 76(2), 58-69. <https://doi.org/10.33407/itlt.v76i2.2800>
- Paterson, D. G., Gerken, C. D. A., & Hahn, M. E. (1953). *Revised Minnesota Occupational Rating Scales*. University of Minnesota Press.
- Rodrigues, F. R., Cunha, M. P., Castanheira, F., Bal, P. M., & Jansen, P. G. (2020). Person-job fit across the work lifespan – The case of classical ballet

- dancers. *Journal of Vocational Behavior*, 118.
<https://doi.org/10.1016/j.jvb.2020.103400>
- Rohrbach-Schmidt, D., & Tiemann, M. (2016). Educational (Mis) match and skill utilization in Germany: Assessing the role of worker and job characteristics. *Journal for Labour Market Research*, 49(2), 99-119.
<https://doi.org/10.1007/s12651-016-0198-9>
- Schlegel, K., & Mortillaro, M. (2019). The Geneva Emotional Competence Test (GECe): An ability measure of workplace emotional intelligence. *Journal of applied psychology*, 104(4), 559. <https://doi.org/10.1037/apl0000365>
- Schmidt, F. L., & Hunter, J. (2004). General mental ability in the world of work: occupational attainment and job performance. *Journal of personality and social psychology*, 86(1), 162. <https://doi.org/10.1037/0022-3514.86.1.162>
- Semrad, M., Scott-Parker, B., & Nagel, M. (2019). Personality traits of a good liar: A systematic review of the literature. *Personality and Individual Differences*, 147, 306-316. <https://doi.org/10.1016/j.paid.2019.05.007>
- Tihomirov, V. B. (1974). *Planirivanje i analiz eksperimenta (pri provedenii issledovanij v legkoj i tekstil'noj promyslennosti)* [Planning and analysis of the experiment (when conducting research in the light and textile industries)]. Legkaja industrija.
- Tsai, K.-C. (2018). An empirical examination of the relationships among creativity, the evaluation of creative products, and cognitive style among chinese undergraduates. *International Journal of Cognitive Research in Science, Engineering and Education*, 6(1), 53–60. <https://doi.org/10.5937/ijcrsee1801053T>
- Ubalde, J., & Alarcón, A. (2020). Are all automation-resistant skills rewarded? Linguistic skills in the US labour market. *The Economic and Labour Relations Review*, 31(3 SI), 403-424. <https://doi.org/10.1177/1035304620903152>
- Yan, L. (2018). Personal basis of general creativity *Science and Education*, 1, 71-76.
<https://scienceandeducation.pdpu.edu.ua/en/articles/2018-1-doc/2018-1-st10-en> .
- Yezhova, O. V., Pashkevich, K. L., & Manoilenko, N. V. (2018). Comparative analysis of foreign models of fashion education. *Revista Romaneasca pentru Educatie Multidimensionala*, 10(2), 88-101.
<https://doi.org/10.18662/rrem/48>
- Zeman, A., Milton, F., Della Sala, S., Dewar, M., Frayling, T., Gaddum, J., Hattersley, A., Heuerman-Williamson, B., Jones, K., MacKisack, M., & Winlove, C. (2020). Phantasia—The Psychological Significance Of Lifelong Visual Imagery Vivdness Extremes. *Cortex*, 130, 426-440.
<https://doi.org/10.1016/j.cortex.2020.04.003>
- Ziegler, M., Dietl, E., Danay, E., Voge, M., & Bühner, M. (2011). Predicting training success with general mental ability, specific ability tests, and (un) structured interviews: A meta-analysis with unique samples. *International*

Journal of Selection and Assessment, 19(2), 170-182.
<https://doi.org/10.1111/j.1468-2389.2011.00544.x>