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Percepcija *eko mode* profesora, administracije i Studenata na visokoškolskim ustanovama – Slučaj Fakulteta za inženjerski menadžment Tatjana Ilić-Kosanović¹, Damir Ilić¹

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Apstrakt: Modna industrija je postala globalizovana, sa pojavom tzv. *brze mode* (brza hiperprodukcija i brza potrošnja). Ovaj trend brze mode ima dubok negativan uticaj na životnu sredinu (zagađenje vode i zemljišta, nedostatak reciklaže, itd.). Drugo ozbiljno pitanje vezano za modnu industriju su uslovi rada (prisilni i dečiji rad). Međutim, pojavljuju se novi trendovi kao što su *održiva moda*, *spora moda*, *eko moda* i etička moda koji pokušavaju da započnu da rešavaju te probleme. U ovom radu analizirana je percepcija nastavnog osoblja, administracije i studenata o *eko modi* na primeru Fakulteta za inženjerski menadžment, Beograd, Srbija. Statistička ANOVA analiza je sprovedena korišćenjem softverskog paketa SPSS18 za istraživanje percepcije različitih aktera visokog obrazovanja o *eko modi*. Rezultati pokazuju da ne postoji statistički značajna razlika u percepciji *eko mode* kod različitih grupa. Završni deo rada iznosi mišljenja prikupljena kroz intervju. o najvažnijim elementima *eko mode* koji doprinose odlukama potrošača za kupovinu *eko odeće*.

Ključne reči: *eko moda*, održiva moda, percepcija, visokoškolske ustanove, nastavno osoblje, administracija i studenti

Higher education Faculty, Administration, and Students' Perceptions of *eco fashion* – Case of the School of Engineering Management

Abstract: Fashion industry has become globalized, with the emergence of so called *fast fashion* (*fast overproduction* and *fast consumption*). This ongoing *fast fashion* trend has profound negative impact on the environment (water and land pollution, lack of recycling, etc.). The other serious issue connected to the fashion industry are labour conditions (forced and child labour). However, the new trends are emerging such are *sustainable fashion*, *slow fashion*, *eco fashion*, and *ethical fashion* that are trying to start solving those problems. In this paper faculty, administration, and students' perception on *eco fashion* is surveyed on the example of the School of Engineering Management, Belgrade, Serbia. The statistical ANOVA analysis has been implemented by using software SPSS18 package to explore the perceptions of various higher education stakeholders of *eco fashion*. The results show that there is no statistically significant difference in the perceptions of different groups of *eco fashion*. The final part of the paper presents opinions on the most important elements of *eco fashion* for the consumers' purchasing decisions collected through the interviews.

Keywords: *eco fashion*, sustainable fashion, perceptions, higher education institutions, faculty, administration and students

1. Introduction

Circular economy has been defined as the economic space “where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimized” (EC, 2015). *Sustainability* can be defined as a “balance of what is taken from the environment and what is renewed” (Gordon and Hill, 2015), and sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own

needs" (UNESCO; 2021), the concept was first recognized by UN in 1972 (Dong, et al., 2014). This is an important issue especially for the fashion industry with growing of so called *fast* (Fung, et al., 2018; Heekang and Hyun-Hwa, 2018) production and consumption trends that have substantial negative impact on the environment (like water and soil pollution). The expression *sustainable fashion* has emerged exploring the possibilities of transforming fashion industry through saving the environment and becoming more ethical from design stage to production and sales (Gordon and Hill, 2015), including eco design, waste management (especially *zero waste* concept), carbon emissions reduction, and job creation (Bocken, et al., 2016; Valenzuela and Böhm, 2017).

Fashion industry is one of the fastest growing industries in last decades together with automobile and high technologies industries (House of Commons, 2019), and is adding more than \$2 trillion to the global economy every year, with outsourcing model of producing that creates the profit margin larger than ever before (Cimatti, 2017). Nevertheless, it loses about \$500,000,000 each year because of poor disposal and inadequate recycling (UN, 2021). Even though some big fashion brands are more dedicated to clothes recycling, there are still huge difficulties in recycling process of mixed materials that make it almost impossible at this point (London College of Fashion, n.d.).

As the industry employs (mostly female) workforce of more than 86 million (UN, 2021) or even 300 million (McKinsey; 2019), the other important topic is emerging – working conditions of vulnerable groups mostly employed in this industry (including children).

In researching fashion industry, apart from environmental issues and working conditions, one of the major factor in transforming fashion industry to a more sustainable production are the consumers and willingness for behavioural changes in buying habits (especially overconsumption) is the topic that is increasingly interesting for the researchers (Strähle, et al. 2015), same as the perceptions and attitudes regarding sustainability and sustainable fashion (Harris, et al., 2016).

This paper examines literature on the emerging trends like *sustainable fashion*, *slow fashion*, *eco fashion*, and *ethical fashion* (both production and consumption). The empirical part analyses faculty, administration, and students' perceptions on *eco fashion* on the example of the School of Engineering Management, Belgrade, Serbia with the implementation of statistical ANOVA analysis using the software package SPSS18 in order to explore the perceptions of various higher education stakeholders of *eco fashion*. The final part of the paper presents opinions collected through the interviews on the most important elements of *eco fashion* that are influencing consumers' decisions.

2. Literature review

During the last hundred years, fashion has changed immensely, as it is not anymore exclusive to the upper classes. It has become more approachable to lower strata of society, as mass production brought size standardization and emergence of inexpensive clothing that is both fine-looking and durable. Last couple of decades produced new trend *fast fashion* - reasonably priced clothes, with various levels of quality and durability, in it's appearance matching high fashion styles. That trend, which is worth billions of dollars, is enabled by globalized production, globalized market, and stretched supply chains (Cimatti, 2017; Janićijević, et al., 2018). The clothing and other fashion products are made in low income countries like Bangladesh, and are available in big retail chains all over the world almost immediately after similar high fashion is shown at design and fashion weeks. Some of these clothes last longer, some don't, nevertheless, very soon, they become "unfashionable" (Bick, et al., 2018; Popescu, 2015; McGrath, 2012) or even waste (Cimatti, 2017), which is in particular characteristic for the special occasion clothes that is worn usually only once (London College of Fashion, n.d.). The most popular brands like Swedish H&M or members of Spanish Inditex (Zara, Bershka, Stradivarius, Pull&Bear on a cheaper side) and "higher end" Massimo Dutti present new apparel in short cycles giving the other brands a task to follow that pace. Fashion industry consumers are driven by desire for expression of personal or group identity, novelty, or by the need for adapting to social requirements (Hedtjärn Wester, 2017; Hedtjärn Wester, et al., 2017; Annamma, et al., 2012).

Traditional production process includes natural resources, processing, creating final or semi-finished goods, distribution, usage of products and, at the end, disposal, which is called the "linear model of the economy", that is usually presented as the take - make/use - dispose sequence (Jørgensen and Pedersen, 2018). This linear system is especially observed in fashion industry that predominantly utilizes non-renewable resources (Niinimäki, 2018), it is responsible for 8-10% of total greenhouse gas

emissions and creates 20% of total world industrial wastewater pollution (UN, 2021). Environmental aspect is very significant because the industry exploits water resources in producing fabrics from natural materials (London College of Fashion, n.d; Gwozdz, et al., 2015) and utilizes chemicals, thus equally polluting water and land. For example cotton, the most popular natural clothing material, uses vast amount of insecticides and pesticides (Mašić, 2018). On the other hand, synthetic clothes uses non-renewable resources like petroleum (House of Commons, 2019), and pollutes the oceans with microplastic (Fung, et al., 2021).

Fashion industry life cycle includes following steps (Whitty, 2015):

1. Raw material extraction;
2. Design and material selection;
3. Clothing manufacture;
4. Packaging and distribution;
5. Sales (shops);
6. Product use and maintenance;
7. Final disposal.

This sequence can include one important step before final disposal – recycling and reusing.

Other than environmental issues, regarding the fashion industry, the working conditions are becoming focus of researchers' attention, particularly after the accident in Bangladesh in 2013, in which hundreds of female workforce lost their lives in a factory building collapse (Bick, et al., 2018; Popescu, 2015; Popescu, 2015b; Strähle, et al., 2015); Pedersen and Andersen, 2015), or various reports on working conditions in China, especially Guangdong province (Ditty, 2015), or reports on using child and slave labour through subcontractors (House of Commons, 2019).

There are more calls in academia, professional research and the activities of the so called *green* movements for the fashion industry to adopt new production philosophies, to become more *sustainable*. However, terms *fashion* and *sustainable* clash in their meaning - *something that goes in and out of style* vs. *something that is capable of continuation in a longer period of time* (Cambridge dictionary, n. d.). At the present, there is a significant question still unanswered, how to close serious and broad gap between these two opposing concepts? Some answers may lay in new emerging concepts like *eco fashion*, *sustainable fashion*, *ethical fashion*, and *slow fashion*.

- *Eco fashion* concept is promoting organic raw materials, and elimination of pesticides or *eco-design* (Wachholz and Pinheiro, 2017; Kobayashi, 2005; Morais, et al., 2015; Morais and Figueiredo, 2015; Pedersen, et al., 2014), with the emergence of *eco-fashion* companies (D'Souza, 2015; Bick, et al., 2018) completely dedicated to the concept. *Sustainable fashion* similarly calls for transformation of production methods into the processes that include designers, manufacturers, marketers, but, also, transformation of the consumers and their needs (KPMG, 2019; Brandão and Gonçalves Da Costa, 2021). As the first step it is proposing using environmentally friendly materials, reduced use or discontinuation of the use of pesticides and promoting and building recycling initiatives (Pedersen, 2019; Henninger, 2016; Reiley and Delong, 2011; Albouy and Olabisi, 2018). Some of the available research is proposing generating a *sustainability model* for fashion industry, established on zero-waste philosophy (Aakko and Niinimäki, 2014; Gharfalkar, et al. 2015).
- The other new concept is so called *slow fashion* that promotes sustainable, ethical, and eco-friendly practices in the fashion industry, emphasising the quality and sustainability of, equally, production process and a product (Wachholz and Pinheiro, 2017; Jung and Jin, 2017) taking into the account the environment and working conditions.
- Also, one of the new concepts is *ethical fashion*, as the ground for making choices in the sustainable design and manufacturing (Niinimäki, 2015), which takes into the account both environmental and social issues (da Graça Guedes, 2011; Wachholz and Pinheiro, 2017), considering both production workforce and the consumers. Some companies from the high end Stella McCartney, over Monsoon, to H&M are starting to adapt the concepts of ethical product design, production, and marketing (Kaikobad, et al. 2015; Candeloro, 2020).

In obtaining clothing and accessories, in making purchasing decisions, consumers are motivated by price, quality, and style, with the price identified as the most important factor. Even though the consumers are often aware of often inadequate working conditions and using the child labour in fashion industry all over the world, low price is still the most important element in shaping a decision on

buying (Harris, et al., 2016). Many researchers are focusing on finding the approaches of involving the consumers in sustainable fashion concept while having in mind their desire to have inexpensive and durable, fine looking clothes (Pedersen, et al., 2014; Petersson McIntyre, 2019; Brandão and da Costa, 2021). Fashion choices are driven by emotions and they have to be taken into account in promoting concepts like eco or slow fashion (McGrath, 2012), especially for the younger consumers (Annamma, et al., 2012; Gazzola et al., 2020). One of the proposed solutions is creating awareness through better informing the younger generations on organic, or eco fashion (Cervellon et al., 2010; Brandão and da Costa, 2021). Today, the youth often makes purchasing choices on the influence of social media, celebrities, and bloggers and vloggers (Kim, et al., 2020), so social media (like Instagram) can be a powerful tool in promoting sustainable fashion (Sponder Testa et al., 2021). Other than age, it is considered that gender is very important factor for sustainable fashion initiatives, as some research has shown that more than 80% of purchasing decisions regarding clothing is made by women (OECD, 2008), so many of those initiatives can target female consumers.

3. Materials and methods

Objectives and survey design

The research has been done at the School of Engineering Management, a private higher education institution in Belgrade, Republic of Serbia, which is a part of the “University Union – Nikola Tesla”. The School has several accredited undergraduate programs (*Engineering Management and Management*), graduate - master programs *Project Management and Industry 4.0*, *Engineering and Management of Security Information Systems*, *Economics and Management of Energy*, and a PhD program *Waste Management*.

The objective of this study is to explore faculty, administration, and students' perceptions on *eco fashion*. Second part of the study presents opinions collected through the interviews of the selected subgroup on the most important elements of *eco fashion* that are influencing consumers' purchasing decisions.

Initially, the survey has been organized from March 8th to 12th, and the series of short interviews with the subgroup has been organized from April 12th to 16th through short, in-person or Zoom based, semi-structured interviews. The participants have been asked to express their perceptions on whether ecologically acceptable (eco) clothing is available for buying in Serbia; is eco clothing of good quality; is eco clothing reasonably priced; is eco clothing durable; and are there enough options for clothing recycling.

Five-point Likert scale (coded: 1 – I disagree completely; 2 – I disagree; 3 – I am neutral; 4 – I agree; 5 – I agree completely) has been used to assess the answers to main research questions. The constructed scale has been subjected to the test of reliability and it has shown good (0.729) Cronbach's Alpha value as shown at Table 1.

Table 1. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.729	.730	5

Source: (Authors)

It is assumed (H_1) that there is statistically significant difference in perceptions of eco fashion between faculty, administrative staff and students with several sub hypotheses, stating that there is statistically significant difference in perceptions of eco fashion between faculty, administrative staff and students with the following subhypotheses:

- H_{1a} : Ecologically acceptable (eco) clothing is available for buyers in Serbia;
- H_{1b} : Available eco clothing is of good quality;
- H_{1c} : Available eco clothing is reasonably priced;
- H_{1d} : Available eco clothing is durable;
- H_{1e} : There are enough options for clothing recycling.

Null Hypothesis (H_0) states that there is no statistically significant difference in perceptions of eco fashion between faculty, administrative staff and students.

Statistical analysis has been performed by using statistical package SPSS v. 18.

Description of the sample

Participants have been contacted by E-mail. Total sample size has been 93 ($N=93$), among them 29 (31.2%) have been undergraduate students, 23 (24.7%) graduate students, 25 (26.9%) academic staff (faculty), and 15 (17.2%) administrative and support staff (as presented at Table 2).

Table 2. Survey Demographics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate students	29	31.2	31.2	31.2
	Graduate students	23	24.7	24.7	55.9
	Academic staff	25	26.9	26.9	82.8
	Administration and support	16	17.2	17.2	100.0
	Total	93	100.0	100.0	

Source: (Authors)

Regarding the gender, 53.8% ($N=50$) of participants have been female and 46.2% ($N=43$) male, as presented at Table 3.

Table 3. Participants' gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	50	53.8	53.8	53.8
	Male	43	46.2	46.2	100.0
	Total	93	100.0	100.0	

Source: (Authors)

For the interviews, participants have been randomly chosen to represent each year of undergraduate, master and PhD studies among the students, and to represent each teaching rank among faculty: teaching associates, teaching assistants, languages professors, assistant professors, associate professors, and full professors; same as representatives of various administrative and support units.

Demography of the interviewees' is presented at Table 4.

Table 4. Demographic of interviewees

Code	Profile	Age	Gender (F/M)
P1	Student, I year, undergraduate studies	19	F
P2	Student, II year, undergraduate studies	20	M
P3	Student, III year, undergraduate studies	22	M
P4	Student, IV year, undergraduate studies	22	M
P5	Master student	25	F
P6	Teaching associate	29	M
P7	Teaching assistant	32	F
P8	Languages teacher	43	F
P9	Assistant professor	46	F
P10	Associate professor	53	M
P11	Full professor	44	M
P12	Students' services associate	43	F
P13	Financial services associate	51	F
P14	Legal office associate	51	F
P15	Library associate	44	F

Source: (Authors)

4. Results and discussion

The one-way analysis of variance (*One-way ANOVA*) is used to determine whether there are any statistically significant differences between the means of three four groups of participants, and to test our hypothesis and sub-hypotheses. *Alpha*, or *significance level*, is set to 0.05 (5%).

Descriptive statistics is shown at Table 5.

Table 5. Descriptive statistics

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Availability of eco clothing	Undergraduate students	29	3.24	.912	.169	2.89	3.59	2	5
	Graduate students	23	3.22	1.242	.259	2.68	3.75	1	5
	Academic staff	25	2.76	1.165	.233	2.28	3.24	1	5
	Administration and support	16	3.00	1.033	.258	2.45	3.55	1	5
	Total	93	3.06	1.092	.113	2.84	3.29	1	5
Quality of eco clothing	Undergraduate students	29	2.97	1.085	.201	2.55	3.38	1	5
	Graduate students	23	3.04	1.107	.231	2.56	3.52	1	5
	Academic staff	25	2.52	1.122	.224	2.06	2.98	1	5
	Administration and support	16	2.56	.814	.203	2.13	3.00	1	4
	Total	93	2.80	1.069	.111	2.58	3.02	1	5
Reasonable price of eco clothing	Undergraduate students	29	2.72	.922	.171	2.37	3.07	1	5
	Graduate students	23	2.87	1.100	.229	2.39	3.35	1	5
	Academic staff	25	2.84	1.068	.214	2.40	3.28	1	5
	Administration and support	16	2.69	1.014	.254	2.15	3.23	1	5
	Total	93	2.78	1.009	.105	2.58	2.99	1	5
Durability of eco clothing	Undergraduate students	29	2.69	.930	.173	2.34	3.04	1	4
	Graduate students	23	2.91	1.083	.226	2.44	3.38	1	5
	Academic staff	25	2.64	1.114	.223	2.18	3.10	1	5
	Administration and support	16	2.44	1.153	.288	1.82	3.05	1	5
	Total	93	2.69	1.053	.109	2.47	2.90	1	5
Recycling options	Undergraduate students	29	3.00	.845	.157	2.68	3.32	2	4
	Graduate students	23	3.00	1.168	.243	2.50	3.50	1	5
	Academic staff	25	2.56	1.193	.239	2.07	3.05	1	5
	Administration and support	16	2.38	1.088	.272	1.80	2.95	1	5
	Total	93	2.77	1.085	.112	2.55	3.00	1	5

Source: (Authors)

Before starting *One-way ANOVA* analysis, a number of assumptions need to be met, and one of the main assumptions is that there must be equality of variance among the different categories under consideration. Levene's test for equality of variance has been conducted as a measure of the homogeneity of variance among different categories. The results are shown at Table 6.

Table 6. Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Availability of eco clothing	1.575	3	89	.201
Quality of eco clothing	.742	3	89	.530
Reasonable price of eco clothing	.189	3	89	.904
Durability of eco clothing	.209	3	89	.890
Recycling options	1.349	3	89	.264

Source: (Authors)

As *Sig (p)* values less than 0.05 indicate that the variance among the various categories is the same for all research questions, *One way ANOVA* can be used. The results can be seen at Table 7.

Table 7. One way ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Availability of eco clothing	Between Groups	3.830	3	1.277	1.074	.364
	Within Groups	105.783	89	1.189		
	Total	109.613	92			
Quality eco clothing	Between Groups	5.019	3	1.673	1.487	.223
	Within Groups	100.100	89	1.125		
	Total	105.118	92			
Reasonable price of eco clothing	Between Groups	.500	3	.167	.159	.924
	Within Groups	93.199	89	1.047		
	Total	93.699	92			
Durability of eco clothing	Between Groups	2.227	3	.742	.662	.577
	Within Groups	99.730	89	1.121		
	Total	101.957	92			
Recycling options	Between Groups	6.348	3	2.116	1.848	.144
	Within Groups	101.910	89	1.145		
	Total	108.258	92			

Source: (Authors)

As the *Sig (p)* values are above 0.05, the main research hypothesis (H_1) that *there is statistically significant difference in perceptions of eco fashion between faculty, administration, and students* is not accepted and there is no reason to reject null *hypothesis*. It takes into the account all sub hypotheses: ecologically acceptable (eco) clothing is available for buyers in Serbia; available eco clothing is of good quality; available eco clothing is reasonably priced; available eco clothing is durable; there are enough options for clothing recycling

Further interviews of the selected subgroup developed around the idea of indentifying the most important elements of *eco fashion* that are influencing consumers' decisions on buying eco clothing. Participants have identified various noteworthy characteristics of *eco clothing* that could influence their choice of clothes:

- affordability (reasonably priced),
- uniqueness (shows individuality),
- durability (is not wearing out too quickly),
- modern design (*trendy, hip, cool*),
- stylishness (smartness, elegance), and
- availability (offered in Belgrade stores).

Table 8 shows main three characteristics of *eco fashion* significant for each subgroup's purchasing decisions: students, faculty, and administration based on subsequent interviews.

Table 8. Elements of eco fashion influencing consumers' purchasing decisions

Students' perspective	Teachers' perspective	Administration's perspective
Trendy	Smart	Affordable
Affordable	Affordable	Durable
Unique	Durable	Available

Source: (Authors based on interviews)

5. Limitations and scope for further research

As a study of one higher education institution, this research has major limitations in terms of methodology and scope of data. For further research it is needed to initiate analysing data collected from various higher educational institutions on national, regional or international level.

6. Conclusion

Fast fashion trend is overwhelming global clothing market and have profound influence on consumers' decisions on buying low priced, good quality, and smart clothing. This trend increases threats to the environment (water and land pollution, lack of recycling, etc.) both in producing materials from natural fibres like cotton and producing materials from synthetic fabrics.

The awareness of dangers that are increasing for the environment, new trends are emerging such are *sustainable fashion*, *slow fashion*, *eco fashion*, and *ethical fashion*.

On the example of the School of Engineering Management, Belgrade, Serbia, perceptions on eco fashion have been explored using statistical *One way ANOVA* analysis. The results show that there is no statistically significant difference in the perceptions of different groups of *eco fashion* in terms of availability, price, quality, durability, and possibilities for recycling. Participants who have been interviewed also emphasised main drivers for choosing eco clothing: modern design (*trendy*), affordability, uniqueness, durability, stylishness, and availability.

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