

Interpreting colour symbolism in finance-insights of financial experts

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ABSTRACT

The main objective of this study is to identify the perception of colour meanings with 'finance' among a group of financial experts. As the research method a diagnostic survey conducted using the Computer-Assisted Web Interviewing (CAWI). The analysed colours included the 11 basic colour terms in English (black, white, red, green, yellow, blue, brown, orange, pink, purple, grey) plus two others (silver and golden). After cleaning up the primary results 60 responses were obtained. For 9 out of 13 colours, significant associations with 'finance' were obtained with the following meanings: black - Illegal/Unethical Financial Activities and Black Market, blue - Marine/Ocean Conservation Finance, brown - Non-Ecological/Non-Green Finance, green - Environmentally Friendly Finance/Ecological Finance and ESG Finance, grey - Shadow Economy and Unregulated Markets, golden - Long-term Savings, Wealth, Luxury, Leading Financial Products, pink - Gender-related financing, red - Negative Financial Results/High Risk/Insolvency, silver - Elderly Finance/Silver Economy. In addition, a large number of respondents associated the colour white with Ethical/Transparent Finance. The remaining three colours did not show any significant connotations with finance. To the best of the author's knowledge, this is the first study of colour symbolism in finance conducted among financial experts and one of the few in this scientific field.

KEYWORDS colour symbolism in finance; behavioural finance; visual finance

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1. Introduction

Among the primary purposes which accompany the use of colours are aesthetics and decoration. However, colours also have a symbolic meaning, i.e. they can carry their own semantic spiritual and social expression, present a message, create identity, depict psychological states, and act as a symbol of specific ideas and a value paradigm (Mikitchenko, 2016; Kaimal et al., 2022; Kudrya-Marais and Olalere, 2022a).

It is worth mentioning that colours are considered not in isolation, but mainly in contrasting pairs or sequences (Hunt, 2006). In line with Kudrya-Marais and Olalere (2022c), colour has three different sources: emotional, socio-economic and cultural. Novikova and Novikov (2021), for example, emphasise that the features of the cultural codes of multilingual space indicate that both positive and negative connotations of each colour are linked to socio-cultural determinants of sociocultural factors. According to Pansat and Khalikova (2023), the realm of colour symbolism goes beyond the linguistic sphere to offer insights into human civilisation, the natural world, moral values, emotions and the human psyche. Colours can take on various connotations in different situations, and in diverse societies, change over time and influence human behaviour and cognitive processes in different ways (Elliot & Maier, 2014). Moreover, in various cultures the same colour can have a positive or negative meaning (Yu, 2014). Similarly, colours can have varying meanings in different areas, e.g. finance, literature, art, etc.

There are three main theories of colour association, i.e. 1) colour-emotion association theory; 2) colour-object association theory and 3) colour-in-context theory (Tham et al., 2019). In line with the first theory, specific colours are associated with the perception of a particular type of emotion and influence psychological functioning (Gil and Le Bigot, 2016). This is culturally dependent, but, for example, according to the Global Color Survey, yellow is most associated with happiness (Global Color Survey - Colorcom, <https://www.colorcom.com/global-color-survey>). Based on the second theory, it can be inferred that people associate given colours with objects, whereby their meaning can, among other things, be culturally conditioned (e.g. in Chinese, "wearing a green hat" symbolises unfaithfulness - Tham et al., 2019) or colour preferences arise from people's average affective responses to colour-associated objects (Ecological Valance Theory) - people like/dislike colours associated with objects they like/dislike (Palmer and Schloss, 2010). According to the third theory, the meaning of colours changes with a specific context. For example, green in finance, from the point of view of investment projects, will signify financial decisions related to implementing

environmentally friendly investments. In the stock market, on the other hand, green marks investments whose prices are rising. However it is worth to mention that in Asia countries the meaning is opposite, i.e. green is used to show that prices are decreasing.

Colour symbolism dates back to prehistoric times and is present everywhere (Watts, 2015). Research into the meaning of colours has been undertaken in many scientific fields, but numerous unidentified areas can still be identified. Among these, finance, where colours play an essential role. To date, there has not been much research on the meaning of colours in the aforementioned scientific discipline, meaning there is a research gap. The authors undertook this task, and the study's main aim was to identify the perception of colour meanings with "finance" among a group of financial experts. Accordingly, the following research questions were posed: 1) What colours show meaning with "finance"? 2) What is the meaning of individual colours with "finance"? 3) Are the meanings of the individual colours universal (a particular colour has only one meaning) or are they diverse (in the case of multiple meanings, the aim was to identify dominant and secondary meanings)? A diagnostic survey conducted using the CAWI (Computer-Assisted Web Interviewing) method on a purposive sample was used as the research method. The findings add value to colour symbolism theory, behavioural finance and visual finance.

Besides the introduction, the structure of the article is as follows. The second part contains the research results in the literature review field on colour symbolism in various scientific areas. The next section presents the empirical research of this paper, divided into a methodological part and results. The last part discusses the study's findings and limitations.

2. Literature Review

A significant role in the study of colour symbolism is attributed to Michel Pastoureau, who analysed the meaning of colours and how it changed over time. His studies include the colours red, black, blue, yellow, white and green, among others, and his findings are included in monographs (Pastoureau 2023, 2019, 2018, 2017, 2014, 2008). A major contribution to the development of colour theory and its influence on the formation of emotions and mood was made by Johannes Itten (1970, 1997). Faber Birren (1988) and John Gage (1999) have also addressed color symbolism in different areas of life and science. Research on colour symbolism is also presented at conferences organised under the auspices of the International Colour Association, and the results are included in proceedings (see, e.g., Kwiatkowska-

Lubanska 2022, Singh 2022, Pereira 2000, Bonnardel et al. 2018). Professional journals, i.e., Color Research and Application (see e.g., publications: Epicoco et al. 2024; Baniani 2022; Demir 2020; Güneş & Olguntürk 2019) and Color Culture and Science Journal (see e.g., publications: Broeder 2022; Barbato et al. 2019; Tallarita 2017), also play an essential role in disseminating knowledge about colour symbolism. However, in the authors' known publications (except Prusak and Mushafiq 2023), research on colour symbolism in finance has not been recorded. To deepen the literature research, a systematic literature review was additionally carried out to verify whether there are publications on this topic.

The two most popular and reputable databases in science, i.e. Web of Science and Scopus, were used as the primary sources. The publication search process was performed as of 26.10.2023. In the Web of Science database, the search was performed with consideration of All Fields, while in the Scopus database, the search was performed according to the field Article Title, Abstract, Keywords. The search was not limited in terms of time nor the type of publication and language. Publications that directly addressed the issue of colour symbolism in finance were searched for first, using the following search strategies: 1) "Color Symbolism" AND Finance, 2) "Colour Symbolism" AND Finance. The use of both approaches was due to different spellings of the word "colour" in American (color) and British English (colour). Unfortunately, no result was obtained. Therefore, the second focus was to search publications from the field of colour symbolism to identify possible indirect relationships with the word finance. In this case, 1) "Color Symbolism" and 2) "Colour Symbolism" were used as search strategies. The selection of publications to conduct the literature review was done using the PRIMSA statement 2020 concept (Page et al., 2021), as shown in Figure 1. Ultimately, 107 publications were analysed. In many cases, the publications were interdisciplinary, i.e. related to different scientific disciplines. Table 1 summarises basic information about the analysed publications, grouping them into key areas of

interest (from the largest to the smallest number of publications). Publications not directly reflected in the identified areas are shown in the group 'Others' at the end of Table 1. It can be seen that colour symbolism applies to many research areas and goes back many years. Among the most popular are: literature; anthropology; linguistics; art; psychology; architecture and landscapes; costumes; film, musical and theatre.

Of these publications, none of them dealt with colour symbolism in finance. Only two articles mentioned broad economic issues regarding the topic under study. These dealt with marketing issues in the cosmetics industry (Bryce et al., 2023) and the influence of socio-economic factors on perceptions of the importance of medicines in Zambia (Schumaker and Bond, 2008).

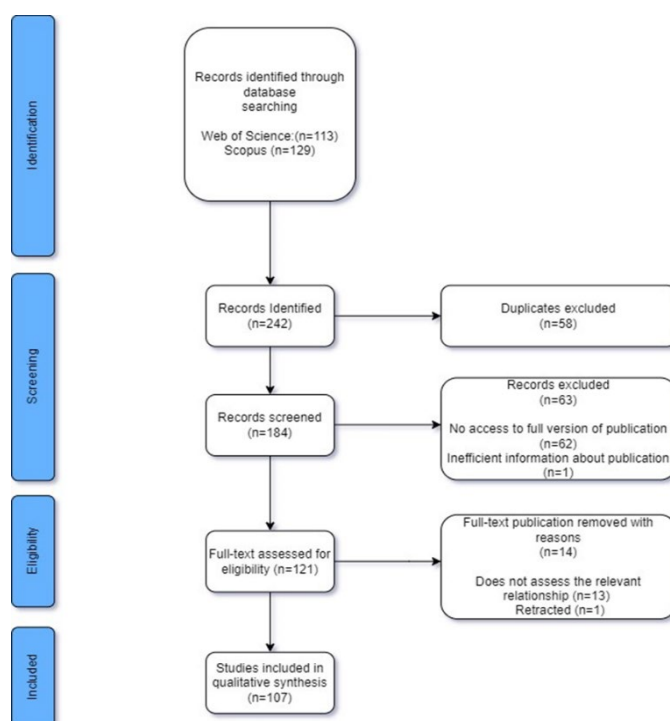


Fig 1. PRISMA flow chart of the conducted systematic literature review
Source: Authors' elaboration.

Scientific fields	Literature sources
Literature (n=25)	(Beckman, 1976); (Ryan, 1976); (Monk, 1977); (Pollard, 1981); (Biggam, 1993); (Yildirim, 2006); (Agirel, 2009); (Mikhaleenko, 2014); (Tarasova, 2014); (Ziod and Zawahreh, 2014); (Hristu, 2015); (Schmiesing, 2016); (Tolasova and Abisalova, 2017); (De Argüelles, 2018); (Bozick, 2019); (Østermark-Johansen, 2020); (Khotamovich and Turonovich, 2020); (Brzozowska, 2021); (Cong and Chistyakov,

	2021); (Yoon, 2021); (Darder, 2022); (Klypina and Shestakova, 2022); (Wijitsopon, 2022); (Hashemi, 2023); (Voronichev and Voronicheva, 2023).
Nations, communities and societies (anthropology) (n=22)	(Urry, 1969); (Breidenbach, 1976); (Needham, 1979); (Searle-Chatterjee, 1981); (Milicic, 1989); (Kiernan, 1991); (Wickler and Seibt, 1995); (Hutchings, 1997); (Hunt, 2006); (Hunt and Chenciner, 2006); (Tao, 2007); (Mamynova et al., 2014); (Mikitchenko, 2016); (Sagiv, 2017); (Batyanova, 2018); (Russell, 2019); (Derzhavina et al., 2020); (Motsamayi, 2020); (Andreevich, 2021); (Kudrya-Marais and Olalere, 2022 a,b,c).
Linguistics (n=13)	(Gabysheva, 2016); (Mukhamadiarova, 2016); (Guryanov, 2017); (Yakovleva et al., 2017); (Driga, 2018); (Blinova, 2019); (Grodka et al., 2020); (Novikova and Novikov, 2021); (Elewa, 2022); (Kartashkova and Belyaeva, 2022); (Khassenov, 2022); (Alharbi, 2023); (Rambiart-Kwasniewska, 2023).
Art (n=10)	(Plog, 2003); (Geschwind, 2013); (Brecoulaki, 2014); (Hollmann, 2015); (Muthesius, 2016); (Petzold, 2018); (Tsyganova and Mannin, 2018); (Zuiddam, 2018); (Kass, 2020); (Patton, 2022).
Costumes (n=6)	(Hayward, 2015); (Bakaeva, 2016); (Bakieva and Popova, 2019 and 2022); (Bakieva, 2020); (Minina, 2021).
Architecture and Landscapes (n=5)	(Jones, 1999); (Erdogu and Ulubey, 2011); (Couacaud, 2016); (Miller et al., 2022); (Lavrenova, 2023).
Psychology (n=5)	(Obonai and Matsuoka, 1956); (Oyama et al., 1963); (Duckitt et al., 1999); (Karotovskaya, 2019); (Kaimal et al., 2022).
Film, musical, theatre (n=4)	(Lee, 2000); (Evans, 2005); (Candel, 2018); (Shirieva and Dyganova, 2015).
Others (n=17)	
Colour symbolism can also be used to create toponyms, including oikonyms. Research in this area was carried out using Bashkir toponyms and Polish oikonyms.	(Bukharova, 2016); (Stachowski, 2018); (Khisamitdinova et al., 2019).
The articles address the use of various symbols, including colour symbolism, in electoral campaigns (presidential and European parliamentary elections) in Romania.	(Buja, 2015); (Tocia, 2019).
Colour symbolism also plays an essential role in cartography, i.e. in the creation of maps, including crisis maps.	(Kaye et al., 2012); (Divjak and Kuveždić, 2018).
Regarding cultural, historical research on colour, with examples from Hungary, the author proves that specific colours, such as yellow, show differentiated meanings in connection with other colours, such as black and green.	(Bálizs, 2021)

The author analysed the official colours of 29 Chinese regimes. Based on the results, the official colour can sometimes be naturally determined according to the substance of the ruling population, sometimes politically determined according to the fifth property of Chinese metaphysics or some national or revolutionary symbols.	(Gao, 2012)
Within this article, the authors attempt to prove from the ochre record from Qafzeh Cave that colour symbolism can go back to prehistoric times, i.e. around 92,000 years ago.	(Hovers et al., 2003)
This article shows the results of a study on the association of odour and colour in three nationality groups (French, Lebanese, Taiwanese). Based on the research, the authors highlight the role of culture and culinary habits in evaluating edibility and colour associations of certain odours in different nationalities.	(Nehmé et al., 2016)
The article refers to the analysis of colour symbolism in the cosmetics industry. It deals with branding and packaging design concerning the use of so-called sakura in this industry.	(Bryce et al., 2023)
The increased presence of 'ochre' in the African Middle Stone Age context, along with changes in human biology and behaviour, has been used to support the hypothesis that 'modern' cognitive abilities originated in Africa. The consistent use of ochre has been interpreted as evidence of colour symbolism, an alternate source of language origins and a defining aspect of 'modern' human behaviour.	(Rifkin, 2012)
The socio-economic context influences, among other things, the perceived importance of drug colours. Differences in the colour of medicines in relation to patients' expectations raise concerns about their efficacy, toxicity, side effects, etc. An analogous effect is associated with the shape and size of medicines. This was the conclusion reached by the authors of a study conducted in Zambia.	(Schumaker and Bond, 2008)
The paper examines the symbolism of the colour blue through the example of Leicester City Football Club. The study shows that colour could give place to identity through branding practices, identity mediation, and visual culture formation.	(Xu, 2019)
Colour symbolism plays an important role when designing interiors. It is essential to consider individual preferences when designing interiors, including cultural, geographical, economic and psychological contexts.	(Haller, 2017)
In this chapter, the author refers to various evolutionary theories to show early colour symbolism.	(Watts, 2015)

Tab 1. Summary of results from the systematic literature review

Source: Authors' elaboration.

3. Empirical Research

3.1. Methodology

The study aims to fill a research gap in colour symbolism, behavioural finance and visual finance. Colour symbolism plays a significant role in the financial industry, influencing decision-making processes, branding and overall communication (Leong et al., 2019; Bazley et al., 2021). As the main objective of our study, we proposed to identify the perception of colour meanings with 'finance' among a group of financial experts. Accordingly, the following research questions were posed: 1) Which colours show meaning with 'finance'? 2) What are the meanings of the individual colours with 'finance'? 3) Are the meanings of the different colours universal (a colour has only one meaning) or are they diverse (in the case of multiple meanings, the aim was to identify dominant and secondary meanings)? We included academics working in the field of finance and people working in the financial sector or in the finance departments of various organisations. A diagnostic survey conducted using the Computer-Assisted Web Interviewing (CAWI) method on a purposive sample was used as the research method. The survey questionnaire was developed in English, considered the lingua franca of business and academia, and is presented in the Appendix. In addition to the metric section, open-ended questions on the perceived meaning of the different colours with the word 'finance' were used. This form of question was used because the study's authors wanted to avoid suggesting any answers to the respondents. The analysis included the 11 basic colour terms in English (black, white, red, green, yellow, blue, brown, orange, pink, purple, grey) (Davis & Corbett, 1995) plus two others (silver and golden) which, based on the knowledge and 23 years of experience of one of the authors of this study in academic work covering the areas of economics, finance and management, had connotations with other academic disciplines related to finance. In addition, respondents were allowed to indicate additional colours that show meaning in association with the word finance. Each respondent was able to provide more than 1 association of a specific colour with finance and there was a possibility to skip the question if the respondent could not think of any association. The maximum number of answers for each colour was equal to 3. To analyse the colour associations, we have divided the responses into given groups of responses called clusters and each response is treated as a standalone response. The threshold for creating a cluster is two similar responses. Apart from typical clusters, we created two specific clusters called "Other" and "Lacks a single association". The cluster titled "Lacks a single association" is similar to the cluster "Other"; however, it

is used instead of the "Other" cluster as it is the most dominant in comparison to all other clusters. This distinction allows us to show whether there are any relevant meanings for a given colour or not. Moreover, in order to determine that a given colour meaning is relevant, two boundary conditions were defined, which should be met simultaneously, i.e. responses as a percentage of total responses should be higher than 25% and responses as a percentage of total respondents should exceed 20%. This approach is based on the fact that the connotation should be relevant to the colour but should also account for a fair number of responses among all respondents. The request to complete the survey and to disseminate information about this study to other colleagues and acquaintances was sent by email to academics working in the broad field of finance, including: heads of finance departments, scientists and lecturers, editors of academic finance journals, national and international finance associations, ministries of finance, major global financial institutions. In total, over 1000 requests to experts from all continents except Antarctica were sent. Information about the survey was also posted on the authors' profiles on ResearchGate and LinkedIn. The survey was conducted in two rounds, i.e., 1) September 2023 – February 2024; 2) August 2024- October 2024 and 75 completed questionnaires were obtained. Bearing in mind that respondents could only indicate meaning for the colours they selected, this means that the number of responses for each colour varies. Out of the above-mentioned, 15 surveys were discarded as they were erroneous. Moreover, we cleaned up the results by removing unintelligible answers.

3.2. Results

The demographics of 60 responses are presented in Figures from 2 to 7. Majority respondents are from the age group 35 to 54. Relatively few young and elder people took part in the survey (Figure 2).

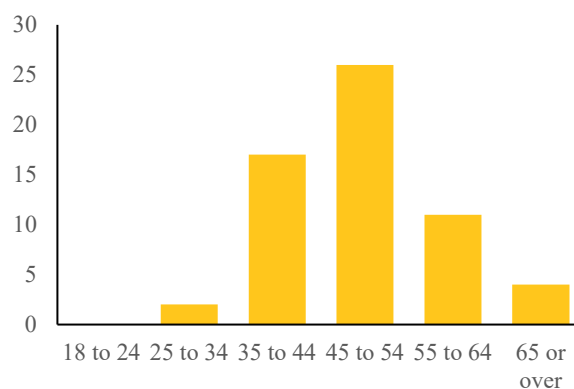


Fig 2. Age groups of the respondents

Source: Authors' elaboration.

Figure 3 presents the nationality of the respondents. The majority of the respondents are from Poland, comprising 26 responses from the total sample. Most of the others are from European countries. This means that Europeans dominated among the respondents. However, this study also included responses from Brazil, China, Chile, India, Pakistan, Jordan and United States.

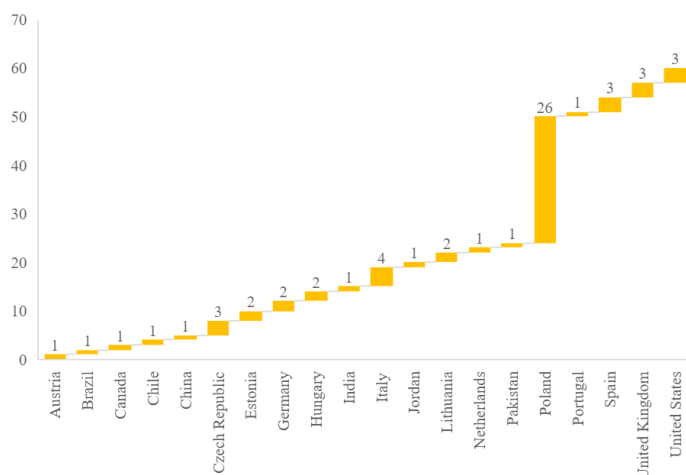


Fig 3. Nationality of the respondents
Source: Authors' elaboration.

Figure 4 shows the gender of the respondents; in total 36 respondents were male (60%) and 24 respondents were female (40%). Figure 5 shows the highest level of education of the respondents. The majority, 51 (85%), of the respondents had a doctorate (PhD) degree, 5 (8%) respondents had habilitation (DSc) after a doctorate and 4 (7%) respondents had a master's (MA, MSc) degree.

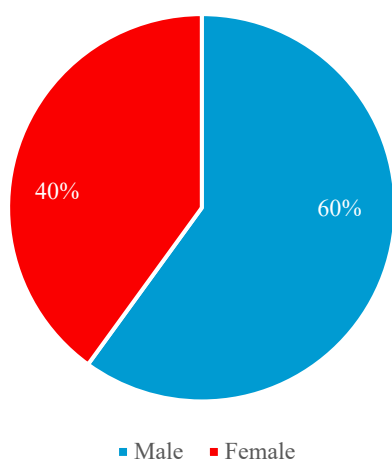


Fig 4. Gender of the respondents
Source: Authors' elaboration.

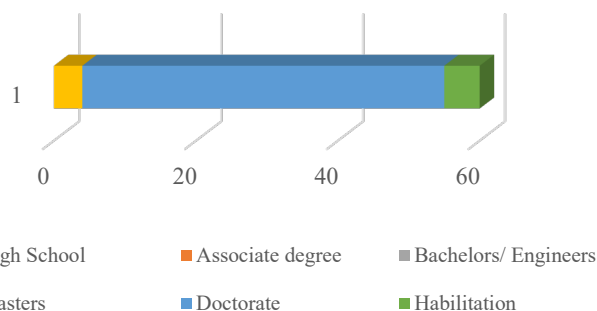


Fig 5. Education of the respondents
Source: Authors' elaboration.

According to Figure 6, 90% of the respondents belonged to academia and 10% of the respondents are from industry, which means a clear advantage of the former.

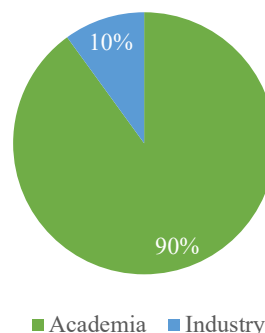


Fig 6. Field of work of the respondents
Source: Authors' elaboration.

Lastly, Figure 7 presents the respondents' experience in the field of work. The majority (63%) of the respondents had more than 15 years of experience, followed by respondents with 10 to 15 years (15%) and 5 to 10 years (10%) of experience. The remaining respondents had experience of under 2 years (5%) and of 2 to 5 years (7%).

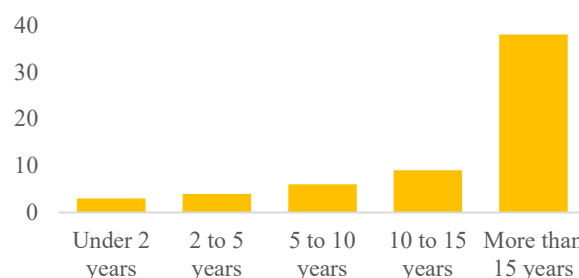


Fig 7. Work experience of the respondents
Source: Authors' elaboration.

Table 2 presents the responses of each colour meaning in accordance with “finance”. Bold font indicates relevant colour associations.

The colour *black* had major responses for 5 clusters, the most dominant cluster being “Illegal/Unethical Financial Activities and Black Market” with 37 responses. In this context, respondents mainly mentioned illegal transactions, including but not limited to financial fraud and money laundering. In addition, also mentioned were: giving wrong recommendations by banks with the aim to maximise earnings; economic activities that occur outside the official channels and are typically unregulated and untaxed; finance associated with crime, narco business, human and arms trafficking and terrorism; double accountancy; unreported transactions; tax avoidance. Another three clusters with fewer responses included the association of the colour black with: 1) the concept of the black swan proposed by Nasim Taleb [According to Taleb (2015), it is an event characterised by three attributes, i.e. it is unusual and very rare, it has a very large impact on its environment, and explanations are created for it after the fact, so that it becomes explainable and predictable.], 2) financial services dedicated for black people, 3) positive results in accounting (the idiom *in the black* refers to the situation where there is a profit or positive balance). Individual associations included: financial markets in less developed countries, credit cards, derivatives, safe financial services, financial products related to accounting.

The colour *blue* had 4 clusters and one “Other” cluster representing responses that had no similarities with other responses. 1) “Marine/Ocean Conservation Finance” was formed based on 14 responses and it is the most dominant cluster. It refers to financial activities done in the marine industry. Blue is associated with water (sea, ocean) in this context. Individual respondents, in addition to indicating an association of this colour with water, also mentioned sky and gas. Several indicated that blue finance is part of socially responsible finance. The second cluster “Traditional Finance Activities” is based on 8 responses and respondents mentioned here: financial activities realised by Deutsche Bank, associations with the classical financial sector (banks, investment firms), bonds and loans, corporate finance and normal financing tasks in business. The third cluster “Innovation and Technology in Finance” had 5 responses and the colour blue is associated with innovative finance, in which AI and big data are used. It also refers to start-ups and new businesses. Three responses indicated a reference to climate as the main symbolism. In eight cases, the associations were isolated from previous ones and people pointed to: financing electricity; blue collar workers; high risk; promising and complex investments; blue-chip finance; finance associated with heaven; blue ocean strategy applied to finance; finance associated with stability, trust and reliability; excellent results in finance.

Colour	Cluster	Response count	Responses as a percentage of the total responses of each colour	Responses as a percentage of the total respondents
Black	Illegal/Unethical Financial Activities and Black Market	37	67%	62%
	Black Swan Concept	4	7%	7%
	Financial Services for Black People	4	7%	7%
	Positive Results in Accounting	3	6%	5%
	Other	7	13%	12%
	Total Responses	55	100%	93%
Blue	Marine/Ocean Conservation Finance	14	37%	23%
	Traditional Finance Activities	8	21%	13%
	Innovation and Technology in Finance	5	13%	8%
	Climate Finance	3	8%	5%
	Other	8	21%	13%
	Total Responses	38	100%	62%
Brown	Non-Ecological/Non-Green Finance	14	54%	23%
	Risk, Investment and Financing	7	27%	12%
	Other	5	19%	8%
	Total Responses	26	100%	43%

Green	Environmentally Friendly Finance/Ecological Finance	36	59%	60%
	ESG Finance	18	30%	30%
	Positive Results, Prosperity	3	5%	5%
	Other	4	6%	7%
Total Responses		61	100%	102%
Golden	Long-term Savings, Wealth, Luxury, Leading Financial Products	21	57%	35%
	Investment in Gold	9	24%	15%
	Other	7	19%	12%
	Total Responses	37	100%	62%
Grey	Shadow Economy and Unregulated Markets	23	74%	38%
	Saving for Retirement and Finances of the Elderly	4	13%	7%
	Other	4	13%	7%
	Total Responses	31	100%	52%
Orange	Lacks a Single Association	8	53%	13%
	Banks/Banking related Products	5	33%	8%
	Finance of Young People	2	14%	3%
	Total Responses	15	100%	24%
Pink	Gender-related financing	14	64%	23%
	Leisure/Fashion Financing	2	9%	3%
	Other	6	27%	10%
	Total Responses	22	100%	36%
Purple	Lacks a Single Association	7	60%	12%
	Church Financing	2	20%	3%
	Finance related to Luxury	2	20%	3%
	No association	2	20%	3%
	Total Responses	13	100%	21%
Red	Negative Financial Results/High Risk/Insolvency	16	52%	27%
	Communist Finance	3	9,5%	5%
	Finance in Erotic Business	2	6,5%	3%
	Activities of Banks and other Financial Institutions	2	6,5%	3%
	In China, red signifies success or good luck, including in financial markets. The colour red depicts price increases in the financial markets.	2	6,5%	3%
	Other	6	19%	10%
	Total Responses	31	100%	51%
Silver	Elderly Finance/Silver Economy	22	81%	37%
	Other	5	19%	8%
	Total Responses	27	100%	45%
White	Ethical/Transparent Finance	11	55%	18%
	Other	9	45%	15%
	Total Responses	20	100%	33%
Yellow	Lacks a Single Association	9	82%	15%
	No association	2	18%	3%
	Total Responses	11	100%	18%

Tab 2. Cluster formation based on the responses.

Source: Authors' elaboration.

When it comes to the colour *brown*, it was mostly collocated with non-ecological finance, that is, with investments in CO2-emitting projects, including those related to coal mining and the extraction of other fossil fuels. Several respondents referred to risk, financial investment and financing as those areas associated with the colour brown in finance. For them, the colour was associated with: risk, rather safe investments, hedged financial instruments, foreign direct investments or sources of financing in the form of shares. One expert indicated that there were no connotations, while four others associated this colour with energy, the circular economy, personal finance or recycling.

The primary association for the colour *green* is investment in and the financing of environmentally friendly projects. Some experts understand green finance more broadly, i.e. as sustainable finance, which includes financial activities in the area of ESG factors. In three cases, this colour is associated with positive financial performance or prosperity. This may be due to the fact that on financial portals, price increases in financial instruments are usually shown in green. The other three experts associate this colour with: DGS (deposit guarantee scheme)-oriented financing, financial instruments for less experienced investors and stock market brokers. One respondent, from China, pointed to a decline in stock prices. As mentioned earlier, this is a characteristic of this region.

The colour *golden* in finance was most often seen by experts through the prism of wealth, long-term investments, financial products prepared for VIP clients, luxury goods, and earning high income. To a lesser but nonetheless quite significant extent, it is associated with investments in gold, which are also an indicator of wealth. Among other meanings of the colour *golden* in finance, respondents perceived: the golden rule in financial analysis (fixed assets should be financed by equity capital), the Fibonacci golden sequence which is used for the creation of investment strategies, gold parity, top financial decisions, golden age (long-term economic prosperity), the Warren Buffet portfolio, big opportunities in finance.

The colour *grey* is most often associated with the shadow economy, the grey zone, activities often conducted on the edge of the law that are ethically questionable, and financial products offered on the unregulated market. In addition, four respondents pointed to connotations of saving for retirement and finances of the elderly. Other respondents indicated no relationship, options, derivatives and the financing of declining projects.

In the case of *orange*, no significant symbolism was noted. Five respondents mentioned banking products or associated the colour *orange* with the logo of a specific financial institution. Two indicated that this colour is related to young

people's finances. In the other responses, this colour was associated with: funding to support Ukraine, media financing, financial services related to criminal activities, funds, financing of promising projects, self-employment and informal customer segment, finance requires caution. One respondent pointed out a lack of connotation.

The colour *pink* in finance is seen from a gender perspective. It is most often identified with women's finances. Some respondents additionally stressed that it is identified more with young females. For several experts, they indicated that it relates to the LGBT community. Two respondents indicated that it was related to the leisure and fashion industry. Other individual experts pointed to: no association, financial instruments which are bought and sold on the OTC (over-the-counter) market rather than major stock exchanges, highly ideologically backed financial products, an untrustworthy financing offer that requires vigilance, good news in finance, advisory.

No significant connotation in finance was noted for the colour *purple*. Two respondents from each cluster indicated no association, finance of the church and finance related to luxury. The other seven experts associated this colour with: finance for people with disabilities, complex and often ambiguous types of financial products, consistent returns, high risk, start-up financing, modernity and cautions.

The association of the colour *red* with finance is rather negative and is mainly considered in three overlapping aspects, i.e. losses, insolvency and high risk. To a much lesser extent, this colour is associated with communist finance and erotic business. For two experts, it is associated with the activities of banks and other financial institutions [Santander and "Sparkassen" (savings banks) in Germany]. This is most likely due to the use of the colour *red* in the logos of these organisations. Two experts pointed out cultural differences that may be due to the meaning of the colour *red*, namely in China, *red* also signifies success or luck in capital markets and finance. Other individual respondents indicated: no associations, market abuse, something prohibited, "diamond finance", red flags in financial management, anger.

Silver finance is mostly related to elderly people's financial activities. Many experts referred to saving for retirement. Individual respondents, meanwhile, indicated: no association, the silver rule in financial analysis (fixed assets should be financed by long-term capital), other types of commodity-linked finance, the silver age in economics that followed the golden age (a pretty good time for companies), sophisticated.

The colour *white* in finance is associated with ethics and transparency. However, other individual respondents pointed to other connotations, i.e.: liquidity management,

finance for white people, finance of non-profit organisations, climate finance, accounting and due diligence, finance of healthcare, white-label solutions especially in connection with fintechs, microeconomics. One expert mentioned a lack of connotation.

The colour *yellow* lacks a main single association with finance. Two experts indicated that there are no connotations. Other individual respondents indicated: activities of "Commerzbank" (this is most likely due to the use of *yellow* in this institution's logo); finance supporting yellow businesses (entrepreneurial, innovative); derivative trading and related markets; shiny stocks; finance referring to Asians; good investment opportunities, investment in commodities and precious metals; yellow can symbolise optimism, energy and creativity, public (government) finance, attention.

4. Conclusion

The traditional and systematic literature reviews on colour symbolism show that this is an important issue, but practically not discussed in the area of finance. Therefore, the authors of this study decided to fill this research gap. The obtained results show that 9 of the 13 colours (black, blue, brown, green, golden, grey, pink, red, silver) are relevant in the area of finance. For the colours black and green, most respondents pointed to their symbolism in finance. In the case of the colour white, its perception by experts was also identified as quite important. Only for the colours orange, purple and yellow, did experts not indicate any universal connection. In addition to important areas of meaning, many experts identified secondary meanings of individual colours in the field of finance.

It is also worth mentioning that in the case of many colours, respondents gave different meanings, although some of them were dominant and others were subordinate. This may result from cultural differences or be justified by colour-in-context theory. For example, the relevant meaning for the colour red is Negative Financial Results/High Risk/Insolvency, but two of the respondents indicated that in China this colour has the meaning of prosperity and success. The colour green was most often associated with ecological and sustainable finance, but, for example, on the financial market it is associated with an increase in the prices of financial instruments. The exception again is China and other Asian countries, where green indicates a decline in stock prices.

When it comes to practical implications, this study enables understanding of the meaning of colours in finance and can be helpful in: communication, for example, the choice of colours when preparing business reports, financial

cartography, impacting decision-making processes, the selection of colours for financial institution logos.

The limitations of this study should also be mentioned. Despite sending over 1000 e-mails asking people to complete the survey, only 60 completed questionnaires were included in the study. The answers obtained, among other things, did not allow: the full identification of differences in the perception of colours in finance by different groups of respondents (cultural diversity, gender, age, experience, etc.). Moreover, the results of the study concern only a group of finance experts, especially those working in academia. Similar studies are planned for other target groups in the future.

5. Appendix

Area	Survey Questions
Preface	We kindly invite you to participate in this study. It is conducted for academic purposes and is anonymous. The study is being carried out as part of the 'Colour Symbolism in Finance' project and aims to explore the perception of the meaning of colours in combination with the word 'finance'. It is aimed at people who interact with finance daily in their professional lives.
Demographic	What is your age? What is your nationality? What is your gender? What is your highest level of education? What industry do you belong to? How much work experience do you have?
Association of Colours in Finance	Instructions: Each respondent can identify between 1 and 3 meanings of a particular colour in combination with the word 'finance'. Please number each definition such as 1)... 2)... 3). If you do not associate a particular colour with the word finance, please leave the fields for that colour blank. If, in addition to the colours suggested in the questionnaire, you perceive another colour in combination with the word "finance", please add this colour and its meaning in point XIV. As an example, let us use the definition of the combination of the colour 'silver' with the word 'economy', i.e. 'silver economy' - "covers economic opportunities arising from the public and consumer expenditure related to population ageing and the specific needs of the population over 50" (The Silver Economy. Opportunities from Ageing, 2015).

Black finance
Blue finance
Brown finance
Green finance
Gold finance
Grey finance
Orange finance
Pink finance
Purple finance
Red finance
Silver finance
White finance
Yellow finance
“Other color” finance: (please write below the name of the colour and the meaning of this colour in combination with the word ‘finance’)

Table A1. Survey conducted for the study.
Source: Authors' elaboration.

6. Conflict of interest declaration

The authors have no conflicts of interest to declare.

7. Funding source declaration

The authors did not receive any funding for this research.

8. Short biography of the author(s)

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