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FACTORS INFLUENCING THE PERCEPTION OF ACADEMIC RESEARCHERS ON ETHICS IN MARKETING RESEARCH AND ITS IMPACT ON OPEN SCIENCE ACCEPTANCE

Abstract. *From the early days, universities have been a symbol of progress, evolution, rock solid principles, and high moral standards. Nowadays, these expectations have been translated to academic researchers, who are required to be the standard of ethical behaviour when building and conducting their research projects. In this context, the present paper evaluates the perceptions of academic researchers on ethics, their factors of influence, and the outcome on the adoption of Open Science acceptance. Based on an exploratory quantitative study, the current paper develops a model for ethical adherence based on three pillars: researcher's experience, past ethical behaviour in research, and perception of ethics. The impact of ethical adherence on Open Science acceptance is described through openness to share the research methodology and data base.*

Keywords*: academic research, ethics, marketing, Open Science, survey*

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1. Introduction

The research function of higher education institutions and academics, as well, has been one major component of society's progress. Since the early days of modern universities, academics were expected to cover both teaching and research roles to a point where research outcomes became a major criterion for career advancements. Thus, academics became more vulnerable to publication pressure and peer competition that led to an increased risk on the science integrity (Macfarlane, 2009; Mawussi *et al.*, 2021; Armond and Kakuk, 2022; Drolet *et al.*, 2022). Besides the individual pressure that academics experience, the university management is also under pressure on the production of research articles in renowned journals, attracting research funds from external sources, ranking high in the university echelons (Burrell *et al.*, 2022). Given the increasing pressure for delivering research outcomes aligned with institution's and department's objectives, as well as for own personal career development, issues related to ethical behaviour emerged. Mawussi *et al.* (2021) discovered, for example, that scientific frauds were determined by the pressure of writing a paper and publishing an article or the fierce competition for prestige. As these issues emerged, a new interest for academia ethics and integrity emerged both in institution's management and in the research topics developed. This paper brings a new perspective on the perception of academic researchers over ethics, the factors that influence these perceptions, and how these factors have an impact on Open Science acceptance. After a brief literature review on academia ethics, methods, results, and discussion will point to the major findings of this current research.

2. Literature review

The roots of social research ethics, and therefore academic ethics, were established in the area of medical research (Wiles, 2013). Thus, the first steps in establishing commonly accepted ethical standards were declared in documents such as the Nuremberg Code of 1947, the United Nations Declaration of Human Rights, the Declaration of Helsinki, and the Belmont Report of 1978 (Madikizela-Madiya and Motlhabane, 2022), ALLEA 2017, Estonian National Code of Conduct for Research Integrity Hea Teadustava 2017 (Tammeleht, Löfström and Rodríguez-Triana, 2022). These documents are a collection of ethical principles that should be approached in any research project, especially in the medical field. For example, the Declaration of Helsinki of 1964 referred to principles of minimising risks, informed consent, privacy, special protections for vulnerable groups, access to beneficial treatment after trial, and dissemination (Bitter *et al.*, 2020). However, the Belmont Report of 1978 requires that researchers uphold three basic principles: respect for persons, beneficence, and justice (Bitter *et al.*, 2020). In summary, regardless of the research area, protecting individuals from physical or emotional harm is the key objective of ethical principles and communities (Sterling and Gass, 2017).

When referring to 'research ethics', Hyytinen and Löfström (2017) define the concept as 'standards of moral behaviour, expressed with reference to ethical theory, intended to guide all individuals employed as professionals in or working as staff or students, with various capacities associated with the production or dissemination of systematic, generalisable knowledge'. In short, 'research ethics' relates to the application of basic ethical principles and guidelines when developing research projects (Tammeleht, Löfström and Rodríguez-Triana, 2022). Another connected concept is also 'research integrity', which is defined as the behaviours and responsibilities that comply with ethical principles and shared values in the research community (Tammeleht, Löfström and Rodríguez-Triana, 2022).

In the general context of research ethics and integrity, the concepts of academic ethics and academic integrity emerged as constructs that relate to research conducted by academics. The ethical challenges of the educational environment go beyond following rules and principles towards human relationships that are more organic, dynamic, and context-dependent (Madikizela-Madiya and Motlhabane, 2022). Macfarlane (2009) even argues that 'real research' is related to real life struggles, such as 'hope and disappointment, loyalty and betrayal, triumph and tragedy', which makes it difficult to follow a code of ethics while doing the actual research. Furthermore, 'academic integrity' is defined as the expectation that all members of the academic community (teachers, researchers, students) would act accurately, honestly, fairly, responsibly and respectfully in their academic endeavours (Farahat, 2022). The reputation of the institution depends on academic integrity, as well as the society's trust in universities' ability to deliver quality research and teaching (Martin, 2017; Bommier, Stœklé and Hervé, 2021). Given the important value of academic integrity for all actors involved, it can be argued that it is one of the most important imperatives in relation to ethics development in academia (Bieliauskaitė, 2021). Therefore, the purpose of academic integrity and academic ethics practices is to help academia members discover the effectiveness of their research endeavour while complying with the framework of ethical principles and conducts (Mawussi *et al.*, 2021).

In a narrower perspective, Lowe *et al.* (2018) define 'academic ethics' in relationship with cheating and plagiarism, the most common ethical misconducts among students. This type of misconducts are a matter of concern for the entire concept of research integrity as cheating in an academic setting is a predictor for unethical behaviour also in the workplace which led to blaming university for failing to instil stronger ethical values in their students (Winrow, 2016). On the other hand, academics seem more likely to believe that industry ethics is lacking, while industry researchers consider to have a comparable ethical approach to academics (Zimmer and Kinder-Kurlanda, 2017). When discussing about students relationship to unethical conducts, unsurprisingly, multiple studies showed that between 50% and 87% of students engaged in misconducts, like cheating, as they were reported mostly by instructors and very rarely by peers (Melgoza and Smith, 2008; Lowe *et al.*, 2018). Mawussi *et al.* (2021) point to the need for ethics as the foundation for

learning programs, as scientific research methodology courses seem to not be enough for students.

Moving towards researchers in academia, when referring to social sciences, the practice of a formal review for research proposals with a focus on ethical constructs is relatively new (Madikizela-Madiya and Motlhabane, 2022). When referring to publishing, Burrell *et al.* (2022) show that the current peer review system started to become a common practice only since the 1960s, a practice that became the unquestionable sovereign these days. Wiles (2013) shows that ethical review in any format has a significant educational function. Sterling and Gass (2017) argue that research ethics debates and discussions are often covered through review boards established at the university level. As Tammeleht, Löfström and Rodríguez-Triana (2022) pointed out, academic integrity and ethics require leadership and strategy, as managers should cover predicting, understanding and solving ethical challenges. For universities, ethical principles enforcement relate to both the conduct of research and researchers' behaviour (Beauchemin *et al.*, 2022). Also, ethical concerns are connected to three key phases of the research process: (1) design, (2) conduct and (3) results' communication (Drolet *et al.*, 2022).

Armond and Kakuk (2022) argued that universities should create an environment of greater support and attention for early career researchers, especially those in insecure and transitory work positions. Following up on the same idea, Drolet *et al.* (2022) address two ethical concerns that are less discussed: the context of the research that may have a massive impact on the well-being of the researcher and the exploitation of students and research assistants in the research projects. From a different perspective, complying with ethical principles seems to be more focused on the on the researchers' ethical behaviour and less on the ethics of the research (Bærøe *et al.*, 2022).

One of the areas connected to academic research and research integrity is also the topic of Open Science, defined as the way towards the ideal of making knowledge a universal good (Bommier, Stœklé and Hervé, 2021). The arguments in favour of Open Science were summarised by Parker (2013) and include: (1) the premise that data sharing will lead to a faster progress and diminished duplicate research efforts, (2) the reciprocity obligation when talking about publicly-funded research projects – the people who paid for it should have free access to the results of those research projects, (3) Open Science as a solution for the unfairness of subscription-based models of publishing. The last point is among the most important, as there are complaints suggesting that subscription-based systems are highly conservative and a narrow path of society's evolution (Parker, 2013). At the same time, one cannot ignore that the expectation of Open Science to enhance the quality and quantity of original research is only an empirical claim, with no evidence-based research (Parker, 2013).

Considering the current state of the literature on the topics of academic ethics, academic integrity, and their connection to open science expansion, the current research was developed to discover which are the predicting factors that

influence the researchers' perception on ethics. Also, evaluating the connection between this perception and the openness to accept the Open Science initiative is another focus of the current research, as it can be seen in the following sections of this paper.

3. Research methodology

Considering the academic researchers' interests in designing scientific studies for European funding or publication in top journals, there is a need of adapting to the ethical requirements of such institutions. Thus, the starting point of this research methodology is represented by the best practices guide regarding ethics in research, developed by the European Commission, a guide entitled "Ethics in Social Sciences and Humanities" (European Commission, 2021). This guide takes into account the provisions of the European Charter for Researchers, as well as the "European Code of Conduct for Research Integrity", developed in 2017 by ALLEA (European Federation of Academies of Social Sciences and Humanities) (ALLEA, 2017).

According to the European Charter for Researchers (European Commission, 2000), the researcher has a considerable responsibility to the people involved in research and their rights, safety, well-being and interests, as well as to the communities that are involved in the research and society in general. The European Code of Conduct for Research Integrity, developed by ALLEA, is built on four principles: Reliability in research quality assurance, Honesty, Respect, and Responsibility (ALLEA, 2017). As an aggregate of these two comprehensive guides, the European Commission guide "Ethics in Social Sciences and Humanities" relates to a series of ethical principles in connection to: deception use in research, cover / undercover research, Internet research and the use of social media data in research, participation in research (informed consent), vulnerable participants, data protection and privacy, misuse of research (European Commission, 2021). All these principles are reflected in the present study, with the scope of analysing the implementation of ethical principles in the research activity of the members of the academic community of the Bucharest University of Economic Studies (ASE), one of the top economic universities in the Central and Eastern European Countries.

The main research objectives refer to: a) Academic researchers' perception on dimensions associated with research ethics; b) Past behaviour in terms of academic researcher's approach related to ethical issues from specific research projects; c) Academic researcher's strictness in the assessment process of ethically sensitive situations from research, which will be called 'ethical adherence' in the present paper; d) Openness to accept the initiatives of the Open Science policy.

Our research hypothesis was that the academic researcher's ethical adherence is influenced by his past behaviour in terms of personal approach on ethical issues from specific research projects, as well as his experience in research (based on the number of studies conducted so far in the academic environment). We

also tested a downstream effect, from the level of ethical adherence to the researcher's openness to initiatives of the Open Science policy, especially those related to giving full access to their research methodologies and data sets.

As exploratory research, our sample size was not determined by statistical calculations, but rather on the intention of having all important segments represented in the research. Thus, out of the total of 142 respondents, we collected data from 90 professors and 52 PhD or master students. The reason for allocating almost 40% of the sample to students is that, as Armond and Kakuk (2022) argued, universities should create an environment of greater support and attention for early career researchers.

4. Research results

4.1. Academic researchers' perception on dimensions of research ethics

As mentioned in the research methodology, our study was based on the ethical principles proposed by the European Commission, principles that take into consideration the „European Code of Conduct for Research Integrity", developed in 2017 by ALLEA (2017). The four principles in this code (Reliability in research quality assurance, Honesty, Respect, and Responsibility) were tested in our research, so to determine the academic researcher's perspective on ethic's association with them. As it can be seen in Table 1, all four principles have a strong association with research ethics, in the respondent's opinion. This can be interpreted as the researcher's need to be honest, responsible, respectful and reliable to ensure research quality. However, if we think about the actual research process, mainly in the participants' selection part, each principle requires specific actions to be taken into consideration, actions such as informing people about the research scope and use of data, obtaining their written consent, and also giving them the option of data deletion when required. All these actions will be analysed in the next sections, as it is important to see which principles have an actual correspondence in the real behaviour of researchers, making thus the difference between declared and real behaviour.

Table 1. Principles of ALLEA code of ethics in research and their level of association with ethics in the academic researcher's opinion

Ethical principles for the ALLEA code	***Average mean****
Honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair, full and unbiased way	4.85
Accountability (responsibility) for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts	4.66
Respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment	4.66
Reliability in ensuring the quality of research, reflected in the design, the methodology, the analysis and the use of resources	4.41

* on a scale from 1 to 5, where 5 means very strong association with ethics

4.2. Past behaviour in terms of academic researcher's approach on ethical issues from specific research projects

In this section, we asked participants about their past behaviour in terms of research participants' information and written consent, as well as their information about the real scope of the research conducted. This analysis is split based on the type of research. In studies that involve the active participation of other individuals in order to obtain data (such as surveys and qualitative interview) we have focused on the written consent. For observational type of studies, we have asked researchers if they have afterwards informed the participants about their inclusion in the study. A particular type of research is the experiment, in which the true scope of a research is to be hidden from the participants until they go through the whole experiment process, so their behaviour would not be influenced by them knowing what the researcher is actually looking for. Another specific type of research is the one analysing the data from public social media accounts, where the European code of ethics recommends that researchers should inform all individuals that have been included in the analysis. And the last type of specific research taken into account in our study is the one of minors, where researchers should obtain the written consent from the parents or guardians.

The results of our research are presented in Table 2, where, according to the European Commission code of ethics, we should tend to have a greater percentage in the 'most of the times' and 'every time' sections. Furthermore, there are some legal requirements nowadays that dictate that researchers should get the written consent from participants, such as the GDPR, which came into effect in 2018.

Table 2. Past behaviour in terms of compliance with the code of ethics requirements in research

Ethical approaches in research	*Never*	*Few times*	*Approx. half of the times*	*Most of the times*	*Every time*
As of 2018, when you conducted survey research or qualitative interviews involving the active participation of other individuals, did you also have a specific question about the written consent of those individuals to participate in the research?	12,5%	8,9%	7,1%	23,2%	48,2%
In your observational research (where the participant is not initially informed of their inclusion in the research so as not to change their behaviour), have you afterwards informed the participants of their inclusion in the study?	10,0%	10,0%	6,7%	13,3%	60,0%

Ethical approaches in research	***Never***	***Few times***	***Approx. half of the times***	***Most of the times***	***Every time***
In your experimental research (where the participant is not initially informed of the true purpose of the research to not change their behaviour), have you informed the participants of the true purpose of the research afterwards?	9,7%	12,9%	6,5%	19,4%	51,6%
In research involving the analysis of public data from social media accounts, have you informed the users of the analysed accounts about their inclusion in the research?	33,3%	8,3%	5,6%	11,1%	41,7%
In research involving the participation of minors (for example, students under 18), have you sought written consent from their parents or guardians?	0%	0%	11,1%	22,2%	66,7%

The past behaviour will be taken into consideration as a determining factor for the level of researcher's ethical adherence, variable that is presented in the next section and will be the core of our conceptual model.

4.3. Academic researcher's strictness in the assessment process of ethically sensitive situations from research (Ethical adherence)

Our study focus is on finding the most relevant factors that will increase the researcher's ethical rigor when designing and conducting academic research, a variable that we called ethical adherence. This is why we have correlated researcher's past behaviour with their perception on what is and what isn't ethical. In order to evaluate this perception, we have built a set of variables that take into account the European code of ethics principles. These variables are presented in Table 3, together with the results of researcher's perspective regarding the level of ethics for each situation. The level of ethics perceived for each variable was measured on a 10-level scale, where 10 means a very high level of ethics, so the higher the average mean, the closer respondents think that the research action is to the ethical norms.

Table 3. Academic researcher's perception of ethical level for specific sensitive research situations

Ethically sensitive research situations	***Average mean****
1. Concealing the concrete purpose of a research and presenting it in a more generic manner to not influence the answers given by the participants	4.39
2. Concealment of the organisation/entity for which the research is carried out to not influence the opinion of the respondents	5.08
3. Carrying out observations on the behaviour of individuals in public spaces, without informing them in advance	4.76
4. Carrying out observations on the behaviour of individuals in public spaces, with their subsequent information	6.77
5. Carrying out observations on the behaviour of individuals in public spaces, with their subsequent information, and offering the possibility to delete the collected data at the request of the observed individuals	7.92
6. Collecting data from the public profiles of social media users, without informing them	4.44
7. Conducting research on a sensitive topic (such as alcohol, drug or domestic violence)	8.56
8. Inclusion of minors (children under 18 years of age) in research, without obtaining prior consent from their parents or guardians	2.15
9. Reporting to authorities illegal or illicit behaviour identified during research, even at the risk of violating the promise of confidentiality made to research participants	5.41

* on a scale from 1 to 10, where 10 means very ethical

Starting from the 9 variables presented in Table 3, we constructed a unique variable: ethical adherence and it refers to the strictness with which the respondents evaluate the research ethical elements. The construct is based on the assumption that the lower the perceived level of ethics for each of the research problems from Table 3, the higher the level of ethical strictness of the respective researcher. As it can be seen in Table 4, the new variable was built on a 5-level scale, from very low to very high level of strictness. This variable represents the core of our conceptual model that will be presented in the following sections, as it is important to see which are its predictors.

Table 4. Academic researcher's level of ethical adherence in correlation with their status

Level of ethical adherence	*Status in the academic community*		*Total*
	Professor	*Student (PhD/master)*	
Very low	6.7%	0.0%	4.2%
Low	24.4%	19.2%	22.5%
Medium	35.6%	53.8%	42.3%
High	33.3%	23.1%	29.6%
Very high	0.0%	3.8%	1.4%

Before going forward with the research objectives, we must take a look at our main variable – ethical adherence – from the researcher's profile point of view. As it can be seen in Table 4, the first correlation is with the status in the academic community (professor or student), a statistically representative correlation (Chi square of 0.025). Comparing the percentages from the above table, we can state that in the case of students (PhD/Master's students), the rigour is usually at an average level, which shows that they are not very clear about what is and what is not ethical, hence the reluctance to present a point of view more clearly towards the extremes. Whereas among teachers, the perception is better grounded, hence there are more frequent opinions towards extremes (low level or high level of ethics).

Table 5. Academic researcher's level of ethical adherence in correlation with their experience

Level of ethical adherence	*Researcher's experience (no. of studies)*			*Total*
	5 or less	*6-20*	*Over 20*	
Very low	0.0%	0.0%	9.7%	4.2%
Low	19.0%	26.3%	22.6%	22.5%
Medium	52.4%	42.1%	35.5%	42.3%
High	23.8%	31.6%	32.3%	29.6%
Very high	4.8%	0.0%	0.0%	1.4%

Another important factor taken into consideration in our study when analysing the predictors of ethical adherence is the researcher's experience. The statistically representative correlation (Chi square of 0.00) shows that the average level of strictness increases among those with less experience, in terms of the number of research projects carried out (Table 5). What is concerning is the percentage of approximately 10% of those experienced in research who have a very low level of strictness. If we analyse this percentage in comparison to the 4.8% of those with low experience in conducting research, but who have the highest degree of strictness, we

can draw the following conclusion: with the increase in the researcher's experience, comes a certain relaxation regarding ethical norms, either because previous experience has shown that there was no need for this strictness, or because experienced researchers are beginning to disagree with the current principles regarding ethics in research.

The third factor taken into consideration as a predictor of ethical adherence was the past ethical behaviour, meaning the manner in which the researcher has complied until now with the ethical norms, showing a statistically representative correlation (Chi square of 0.017). As presented in Table 6, those who have complied with the ethical requirements in the research carried out to date have a more drastic level of evaluation of research ethics. While those who did not really comply are at an average level of demand regarding ethics in research.

Table 6. Academic researcher's level of ethical adherence in correlation with their past ethical behaviour

Level of ethical adherence	***Past ethical behaviour (compliance with ethical norms)***			***Total***
	Rarely	***Average***	***Often***	
Very low	0.0%	6.9%	5.5%	4.2%
Low	18.2%	27.6%	24.7%	22.5%
Medium	54.5%	58.6%	26.0%	42.3%
High	27.3%	6.9%	41.1%	29.6%
Very high	0.0%	0.0%	2.7%	1.4%

The last factor from our predictors list is the level of researcher's association of ethics with responsibility, one of the 4 dimensions from the ALLEA code of ethics in research. This turns out to be also a statistically representative correlation (Chi square of 0.022), showing that the more researchers associate ethics in research with the idea of responsibility, the stricter they are in evaluating the elements that involve a certain ethical sensitivity (see Table 7).

Table 7. Academic researcher's level of ethical adherence in correlation with their level of association for research ethics with responsibility

Level of ethical adherence	***Level of association for research ethics with responsibility***			***Total***
	Low	***Medium***	***High***	
Very low	0.0%	33.3%	3.0%	4.2%
Low	50.0%	33.3%	21.2%	22.5%
Medium	50.0%	33.3%	42.4%	42.3%
High	0.0%	0.0%	31.8%	29.6%
Very high	0.0%	0.0%	1.5%	1.4%

All these correlations convey to the inclusion of three predicting factors in our model: researcher's experience, past ethical behaviour, and perception on ethics (as being associated with responsibility). This model will be discussed in the next section, after also presenting also the output effect of Ethical Adherence – the openness to accept the initiatives of the Open Science policy.

4.4. Openness to accept the initiatives of the Open Science policy

One of the most important nowadays policy for the scientific community is Open Science which increases efficiency and quality of research, and also nurtures plus-value collaborations. One of the most debated dimension of this new policy is the transparency of research methodology, database and results. This is the reason for which we have included in our study such an analysis, in order to determine the ethical adherence impact of researcher's receptivity to the Open Science policy. This policy has 6 major principles: Open methodology, Open source, Open data, Open access, Open peer review and Open educational resources. Out of these 6, just for 2 of them we found statistically representative correlations – Open methodology (Chi square of 0.004) and Open data (Chi square of 0.003).

When it comes to Open methodology (Table 8), researchers with a medium level of rigor are the most open to fully publishing the research methodologies. There is some reluctance in the case of those with a low level of strictness, one explanation could be the lack of comprehensive understanding of ethical requirements, hence the fear of having done something wrong without knowing it. This reluctance is also observed in the case of those who have a high level of strictness. This can be explained through a certain selfishness of not making available to everyone the result of a long and rigorous work of building a correct research.

Table 8. Acceptance of full publication of research methodology based on level of ethical adherence

Full publication of research methodology	***Level of ethical adherence***			***Total***
	Low	***Medium***	***High***	
Totally disagree	10.5%	3.3%	9.1%	7.0%
Disagree	5.3%	3.3%	18.2%	8.5%
Medium	26.3%	16.7%	27.3%	22.5%
Agree	36.8%	23.3%	13.6%	23.9%
Totally agree	21.1%	53.3%	31.8%	38.0%

The same situation can also be found for the agreement on the free sharing of the data collected by the researcher (Table 9), where again those with a medium level of strictness are the most open to this direction of the Open Science policy.

Table 9. Acceptance of free sharing for database in correlation with the level of ethical adherence

Free sharing for database	*Level of ethical strictness*			*Total*
	Low	*Medium*	*High*	
Totally disagree	21.1%	6.7%	13.6%	12.7%
Disagree	15.8%	26.7%	9.1%	18.3%
Medium	26.3%	20.0%	40.9%	28.2%
Agree	31.6%	16.7%	22.7%	22.5%
Totally agree	5.3%	30.0%	13.6%	18.3%

These two correlations will be used in the model proposed in section 4.5, showing the intensity of their correlation with the ethical adherence.

4.5. Model of predictor factors for ethical adherence and its influence on Open Science

The corroborated result of the two sections of correlations from above (4.3 and 4.4) led us to the design of the conceptual model from Figure 1. As it can be seen, there is a set of input factors, called the predictors of ethical adherence: researcher's experience, past ethical behaviour and perception on ethics (as being associated with responsibility). The output is represented by the impact of ethical adherence to Open Science principles of open methodology and open data. All these connections were then tested statistically, in order to determine their strength.

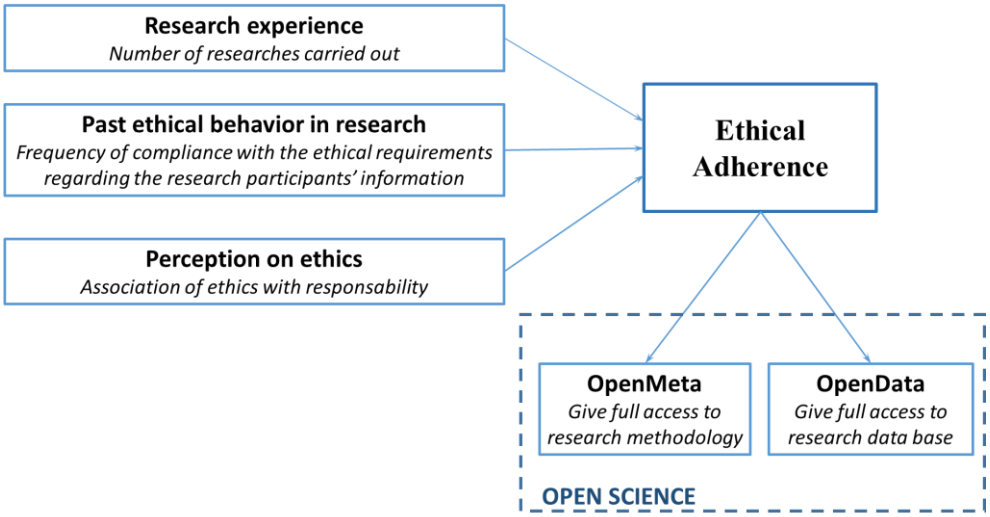

Figure 1. Conceptual model of predictors for ethical adherence and its influence on Open Science

We based our analysis on the four-step model described by Morteza et al. (2010), complemented by the analysis process described by Kline (2011). We started by evaluating the reliability and internal consistency for our constructs measured using a 5-point Likert scale, and we found that each construct has values well above the 0.7 threshold for the Cronbach's Alpha indicators (Kock, 2022). According to the values in Table 12, we can infer that the latent constructs perform well and accurately describe our concepts. Also from Table 10, we can see that the average variance extracted (AVE) values are above the threshold value of 0.5, and the square roots of AVE are higher than any other correlation among latent variables, which leads us to conclude that our constructs have good convergent validity and a good discriminant validity (Orzan *et al.*, 2013).

Table 10. Reliability and validity analysis

	Alpha	**AVE**	**1**	**2**	**3**	**4**	**5**	**7**
1. ResExp	0.797	0.771	**0.866**	0.496	0.533	0.592	0.502	0.589
2. EthicBeh	0.729	0,679	0.496	**0.793**	0.589	0.499	0.683	0.572
3. EthicPer	0.794	0.749	0.533	0.589	**0.912**	0.498	0.589	0.483
4. EthicAdh	0.811	0,881	0.592	0.499	0.498	**0.883**	0.645	0.511
5. OpenMeta	0.804	0.832	0.502	0.683	0.589	0.645	**0.889**	0.589
6. OpenData	0.832	0.772	0.589	0.572	0.483	0.511	0.589	**0.881**

We used WarpPLS 8.0 with the bootstrap resampling method to analyse our conceptual model. Figure 2 shows the model's estimates of β path coefficients with their probability values and the R2 coefficients and we can infer that Ethical Adherence variance is explained by our hypothesised antecedents for about 45%, which is a good estimation in our context. The most relevant predictor of researchers' intention to behave in an ethical manner in an open science context is their previous experience in conducting research, meaning that probably more experienced researchers tend to be more aware of ethical concepts and their importance in the execution of valid and robust research. Past Ethical Behaviour and Perception of Ethical Issues are almost as important as predictors of Ethical Adherence, and all these constructs have been validated as predecessors of our main construct. In turn, Ethical Adherence reflects on the researchers' intention to offer their data and metadata to the public domain. Perhaps not surprising, our construct shows a much stronger influence towards researchers' willingness to share their data (45%), and a somewhat less enthusiastic propensity towards sharing metadata and research methodologies (23%). The beta path coefficients show the same pattern, Ethical Adherence being a stronger indicator of willingness to share data, although it is a fairly good indicator of researchers' willingness to share the metadata and their methodology.

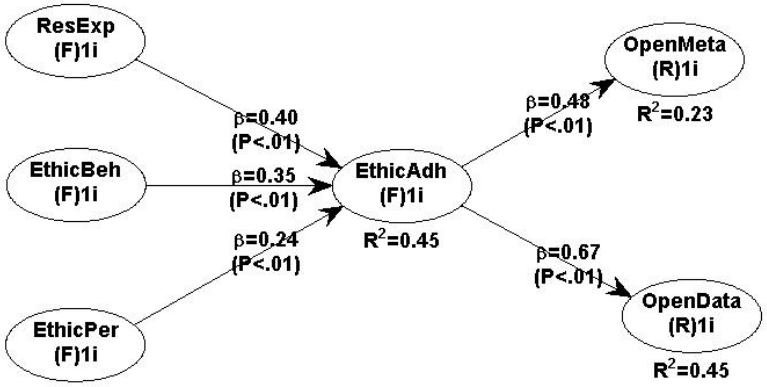

Figure 2. Ethical Adherence Model estimated using PLS Method

Table 11 shows the model fit and quality indices, as computed by WarpPLS 8.0 (Kock, 2022). All of them show good or even excellent values and probabilities. Among them, the average block variance inflation factor (AVIF) index, which is considered the best indicator of model fit, has a value of 1.058, well below the ideal limit of 3.3, while the average R-squared (ARS) index is at 0.378 for a $p<0.001$ (Orzan *et al.*, 2013). In conclusion, our findings validated the proposed model and its research hypotheses.

Table 11. Model fit and quality indices (computed with WarpPLS 8.0)

Indices	Criterion
Average path coefficient (APC)=0.429,	P<0.001
Average R-squared (ARS)=0.378,	P<0.001
Average adjusted R-squared (AARS)=0.371,	P<0.001
Average block VIF (AVIF)=1.058,	acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=1.593,	acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)=0.615,	small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)=1.000,	acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)=1.000,	acceptable if >= 0.9, ideally = 1
Statistical suppression ratio (SSR)=1.000,	acceptable if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)=1.000,	acceptable if >= 0.7

5. Conclusions, limits and further research directions

Research ethics refers to standards of moral behaviour intended to guide all members of the academic environment (professors or students) in their research activity. However, human relationships are more organic, dynamic, and context-dependent, which makes it difficult to follow a code of ethics while doing the actual research. Considering that ethical concerns are connected to three key phases of the research process – design, conduct and dissemination – it is of paramount importance

to see the specific activities undertaken in each phase, so that the ethical norms can be adapted, even more we should take into consideration the particularities of different research methods and research domains.

This article presented the results of a quantitative study among academic researchers regarding their perspective on ethical norms, with the scope of identifying the predicting factors of ethical adherence and its impact of Open Science policy acceptance.

As discovered, the three main predictors of ethical adherence, defined as the researcher's level of strictness in abiding by the existing codes of ethics, were: researcher's experience, past ethical behaviour in research, and perception on ethics. Based on the statistical relationship between these variables, we have built an Ethical Adherence Model. This model also presents a second category of relationships; this time, the analysis being focused on the impact that ethical adherence has on researcher's acceptance of Open Science principles related to public sharing of his methodology and data base.

Our model can find its usefulness both in the academic world and the business environment. When considering the academic community, we are already aware of the researcher's need for a more precise guide through the ethical perspective of his activity. First of all, because what the researcher is building also represents the university to which he belongs. Secondly, because most researches in the academic environment are conducted for publication, where we can see nowadays a very strict evaluation process from the most prestigious journals and conferences. And thirdly, the European funded non-reimbursable research projects also require a thorough evaluation of every proposal, and for this each university has to have its own Research Ethics Committee and Research Ethics Code of conduct. The last dimension in which our model can find its practical impact refers to the university's need to convince its researchers to share their work, within the Open Science policy, where we see a statistically significant difference in accepting this policy between experienced researchers and beginners. These results can be used in designing future workshops and seminars about Open Science, with different approaches for those two segments.

The practical impact of our research on the business environment resides, first of all, in the crucial need for a higher protection of the research participants and their data. Our model can be used by research companies to adapt, update and improve their own codes of ethics.

Referring to the limits of our research, of course we have to first mention that this was an exploratory research, thus future researches will have to take into consideration the representativeness of the collected information and the structure of the sample. Also, because this study was conducted by researchers for the Bucharest University of Economic Studies (ASE), we have limited our analysis to just that – the academic community of ASE. Being one of the biggest economic universities from the Central and Eastern European Countries, we can state that some of our conclusions can also be valid for other universities; however, a more dedicated research on each region would be recommended.

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