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# How do personality traits influence Open Government Data (OGD) adoption and usage? Investigating the indirect and moderating effects

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## ABSTRACT

Open Government Data (OGD) research has focused for a long on the adoption and usage from the perspectives of users across different contexts. The underlying rationale for this specific focus is that OGD initiatives are undertaken to further citizen engagement with OGD for value generation and innovation purposes. Conceding that usage propensity is different across individuals, it is important to understand the influence of personality traits vis-à-vis OGD adoption and usage. Given that OGD has been regarded as a sophisticated “technology” and the role of personality traits has been considered as important in the adoption and usage of “technologies” in general, therefore, the present study contributes to the extant OGD-focused literature from a novel dimension. The study invokes the adapted model of the Unified Theory of Technology Adoption and Use (UTAUT) alongside the HEXACO-100 inventory constructs for studying the relationships between the constructs with a sample of 530 respondents. The results demonstrate that higher user Openness to Experience contributes to their higher Effort and Performance Expectancy; exposure to Social Influence; an increased level of Trust; and a more positive perception of Facilitating Conditions and Information Quality. Agreeable people are more likely to voluntarily use OGD. An individual’s conscientiousness improves their perception of factors related to OGD quality. Excessive emotionality leads to a more critical perception of systems and information quality issues. Our findings also attest to the moderating impact of Honesty-Humility across Information Quality-Behavioral Intention positively; Extraversion across Information Quality-Behavioral Intention negatively and Extraversion across Trust-Behavioral Intention positively. Honesty turns out to be important for considering Information Quality vis-à-vis OGD adoption and usage but whilst extroverts are concerned about Information Quality, i.e. flawless information retrieval via OGD sources, Introverts are concerned about OGD trustworthiness, i.e. credible

OGD for its adoption and usage and Extroverts find the OGD reliable and credible. With pointers for further research across the personality traits-OGD adoption and usage theme, the study closes with practitioner implications.

## CCS CONCEPTS

• Computing in other domains; • Computing in government; • Open Government Data;

## KEYWORDS

Personality, HEXACO, Open Government Data, OGD

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## 1 INTRODUCTION

Open Government Data (OGD) and its impact on the socio-economic fabric has become a popular research theme for more than a decade now [1]. As a major step towards furthering government transparency apart from ensuring economy, efficiency and effectiveness [2], OGD initiatives are a pathway for value generation and innovation by a range of stakeholders like businesses, voluntary sector professionals, citizens, journalists, academia, etc. [3]. In its crudest sense, OGD implies the usage of dedicated web platforms by the government for provisioning of machine-readable datasets pertaining to the structural-functional dimensions of the government [4]. For more than a decade now after the momentous call made by the ex-US President, Barack Obama [5], extant research has focused on the adoption and usage behaviors with specific emphasis upon the levels of engagement and the drivers and barriers associated therewith on account of the quality metrics, awareness levels, government pro-activeness, and the like [6] [7] [8]. Like other “technologies” where adoption and usage behavioral intention has been empirically studied [9][10], this is surprising that whilst an entire stream of research is dedicated towards understanding the role of personality traits on the technology adoption and usage [11]



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[12] [13] [14], the role of personality traits (i.e. Big 5 personality traits) has not been probed so far vis-à-vis OGD adoption and usage. Thus, the present study seeks to further the contours of OGD literature by understanding the relationships between the personality traits (via the comprehensive HEXACO-100 inventory) [15] and the behavioral intention to adopt and use OGD (via the adapted Unified Theory of Technology Adoption and Use (UTAUT) model) [16] [17]. From a methodological perspective, we contribute by introducing a step-by-step approach to building and assessing a combined model that provides an understanding of the nature of the consolidated (indirect and/or moderating) type of effect of personality traits on behavioral intention to adopt and use OGD. To answer the research question, “How do personality traits influence Open Government Data (OGD) adoption and usage?”, the study derives inferences from the hypotheses’ analysis wherein the currently-enrolled undergraduate and postgraduate students (n~530) from a leading Indian private university, who are OGD users were a part of this study’s sampling frame. The rationale for administering the research instrument among the university students is that the academic sector has been regarded as the potent target for OGD re-use and adoption and as a part of the teacher-student dyad, pedagogical applications base themselves on the direct or indirect re-use and adoption of OGD [17]. The study’s originality lies in the selection of the research question and it is hoped that it shall constitute a strong edifice for further research in this direction.

## 2 RELATED RESEARCH & HYPOTHESES

### 2.1 OGD

OGD is provisioned across diverse sectors like education, energy, weather, health, transport, etc. with usage implications for the users hailing from different backgrounds so that the latter may engage in value creation and innovation through their ingenuity [18] [19]. These value creation and innovation applications shall further economic development as well [20]. For ensuring the efficacious user engagement with OGD, it is important that its quality standards are robust to attest its authenticity and accuracy [8]. These aspects have been a subject of intense interest among the academics so far. A review of the OGD conceptualization and application may be scanned via the works of Wirtz and his colleagues, in particular [1] [21].

As specified earlier, OGD is being considered a “technology” and as a part of the Information Systems (IS) literature, the adoption and usage of OGD has been amply investigated through the lens of theories like the Theory of Planned Behavior (TPB) [22], Theory of Reasoned Action (TRA) [23], Technology Acceptance Model (TAM) [24] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [16]. For the present study, the adapted version of the UTAUT model shall be referred. The adapted UTAUT model also falls in line with the extant literature veering around the empirical studies addressing the personality-technology adoption and usage linkages [25] [26]. Following the key tenets of the constructs, it is hypothesized in the present study that each of the nine constructs has a positive effect on behavioral intention for OGD use (Table 1).

### 2.2 Personality

Personality has been conceptualized as the perception and/or response of an individual towards a particular situation [27]. Personality covers many aspects like thoughts, beliefs, feelings, attitudes, behavior, etc. and remains stable over time and circumstances and is a resultant of hereditary factors apart from personal and societal experiences [28] [29]. Hitherto, different personality assessment frameworks have been used in research like Cattell’s 16 Primary Factors (16 PF) [30], Eysenck’s three traits (extraversion, neuroticism, psychoticism) [31], Goldberg’s Big-5 traits (openness, conscientiousness, extraversion, agreeableness, neuroticism) [32], Lee and Ashton’s extended Big-5 traits in the HEXACO-100 inventory (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience), etc. [15].

### 2.3 Technology adoption and usage vis-à-vis Personality traits

Extant literature on technology adoption and usage has clinched significant implications of personality traits via Big-5 and HEXACO inventories both with mixed research findings [33] [34] [35] [36] [37]. *Firstly*, so far, no studies have been found that have tested the effects of personality traits in the context of behavioral intention to use OGD. *Secondly*, HEXACO model was not involved in such a context of research. *Finally*, as few previous studies demonstrated [38], the behavioral intention to use and adopt technology can be influenced by a comprehensive form, that is, a combination of several types of personality traits influence, which requires additional study in the context of OGD.

Thus, in order to fill these gaps, we first, study each type of HEXACO personality traits - *indirect* and *moderating* - effect in separate models so then they would allow us to hypothesize about the possibility and nature of the *combination* of personality traits effects types’ on behavioral intention to use and adopt OGD in the final model. For the present study, the comprehensive HEXACO-100 inventory is being referred for furthering our understanding regarding the relationships between the adapted UTAUT model and the Behavioral Intention to adopt and use OGD. Following the presented concept, we simultaneously introduce two types of hypotheses for each of the HEXACO personality traits - about the presence of its *indirect* (A) and *moderating* (B) effect on behavioral intention to use and adopt OGD (Table 2).

With regard to the users’ adoption and usage of the video games and the extent of Facebook engagement, *Honesty-Humility* was not found to have any significant impact on the Behavioral Intention [38] [39]. In another case, lower scores across this trait were found to have significantly strong relationships with the Behavioral Intention to engage with internet, smartphone, cloud apps and gaming apps given their “addictive” stances [40] [41] [42]. Therefore, keeping the “positive” stance in mind, it is anticipated that the Behavioral Intention to adopt and use OGD should be more for users scoring “high” across this trait (H10A\_1-H10A\_9 – *indirect* effect; H10B\_1-H10B\_9 – *moderating* effect).

Likewise, with regard to the influence of *Emotionality* on technology adoption and usage, significantly positive moderating effects have been attested in the Facilitating Conditions-Behavioral Intention linkage in the case of internet experience [38] and Performance

**Table 1: UTAUT model constructs with hypotheses**

UTAUT Construct	Definition	Reference	Hypothesis
Performance expectancy (PE)	The extent to which an individual believes that using the OGD will facilitate her or him realizing benefits in job performance	[16]	H1: Performance Expectancy has a positive effect on BI
Effort expectancy (EE)	The extent to which an individual perceives the easiness linked with the implementation/use of the OGD	[16]	H2: Effort Expectancy has a positive effect on Behavioral Intention
Social influence (SI)	The extent to which an individual comprehends the significance of others' perceptions for him/her to use a OGD	[16]	H3: Social Influence has a positive effect on BI
Facilitating conditions (FC)	The extent to which an individual believes that an organisational and technical infrastructure exists to support the use of OGD	[16]	H4: Facilitating Conditions have a positive effect on BI
Voluntariness of use (VU)	The extent to which an individual perceives that OGD use is voluntary or of free will	[62]	H5: Voluntariness of Use has a positive effect on BI
System quality (SQ)	The extent to which the performance of the information system in terms of reliability, convenience, ease of use, functionality and other system metrics influences individual willingness to adopt OGD	[64]	H6: System Quality has a positive effect on BI
Information quality (IQ)	The extent to which the characteristics of the output offered by the information system, such as accuracy, timeliness and completeness influence individual willingness to adopt OGD	[64]	H7: Information Quality has a positive effect on BI
Data quality (DQ)	The extent to which OGD are free from errors, complete, accurate, appropriately formatted as per standards and ready for reuse	[6]	H8: Data Quality has a positive effect on BI
Trust (T)	The extent to which OGD can be trusted	[6]	H9: Trust has a positive effect on BI

Expectancy-Behavioral Intention linkage in the case of engagement with the Enterprise Resource Planning systems [43]. High scores across this personality trait is suggestive of a user being lesser inclined towards a learning goal orientation [44], and, thus, it is likely that high scorers across this trait would be less likely to adopt and use OGD (H11A\_1-H11A\_9; H11B\_1-H11B\_9).

*Extraversion*, on the one hand, has been found to have directly negative association with the Behavioral Intention to adopt and use IT system [25], and, on the other hand, it has been found to have strong positive association with the Behavioral Intention to adopt and use socially-assistive robots via Facilitating Conditions, Perceived Usefulness, Social Influence and Trust [45]. At the same time, this trait was not found to have any impact on the adoption and usage of the social-networking generated health information [46]. It is anticipated that OGD adoption and usage should be determined by the users scoring high across this trait (H12A\_1-H12A\_9; H12B\_1-H12B\_9).

As regards *Agreeableness*, it has been clinched that it has positive impact on the Effort Expectancy-Behavioral Intention relationship, especially for the males, in the case of desktop video-conferencing (DVC) adoption and usage by the students [47] as also on the Social Influence-Behavioral Intention relationship in the case of online stocking [42]. It has been found to have strongly positive impact on the Behavioral Intention to adopt and use office/editing and

cloud apps [39] but was found to have no impact in the case of the web-based classroom technological system [25]. In line with the present study's aims, it is hypothesized that the Behavioral Intention towards OGD adoption and usage shall be high among those scoring high on this trait (H13A\_1-H13A\_9; H13B\_1-H13B\_9).

*Conscientiousness* has been attested as directly as well as indirectly predicting technology adoption and usage. Low conscientiousness scores were associated with a strongly positive influence on the Performance Expectancy-Behavioral Intention relationship [43] but high conscientiousness scores were associated with a strongly negative influence on the Social Influence-Behavioral Intention relationship [42]. For OGD users, it is anticipated that being systematic, logical and methodical is pertinent to engage in activities like data analysis, data linking and data visualization. Therefore, it is hypothesized that high Conscientiousness scores should be related with increased Behavioral Intention towards OGD adoption and usage (H14A\_1-H14A\_9; H14B\_1-H14B\_9).

Finally, regarding the role of *Openness to Experience* vis-à-vis the Behavioral Intention towards technology adoption and usage, research findings suggest that the relationship is positively determined for those scoring high on this trait, case in point being the Behavioral Intention to adopt and use socially-assistive robotics or collaborative technologies [45]. Contrastingly, high scores across this trait resulted in a negative moderating influence on the

**Table 2: model constructs with hypotheses**

HEXACO Construct	Definition	Effect type	Hypothesis
Honesty-Humility (H)	The extent to which an individual is fair, honest and humble as against being manipulative, conceited and materialistic	Indirect	H10A_1-H10A_9: Honesty-Humility will be positively associated with each of the OGD-related Nine technology adoption factors[1]
		Moderating	H10B_1-H10B_9: The relationship between each of the OGD-related Nine technology adoption factors and BI is stronger for individuals with higher Honesty-Humility
Emotionality (E)	The extent to which an individual is anxious, worrying, sentimental and considerate as against being courageous, detached and individualistic	Indirect	H11A_1-H11A_9: Emotionality will be negatively associated with each of the OGD-related Nine technology adoption factors
		Moderating	H11B_1-H11B_9: The relationship between each of the OGD-related Nine technology adoption factors and BI is stronger for individuals with lower Emotionality
eXtraversion (X)	The extent to which an individual is social, assertive and expressive as against being aloof, quiet and non-aggressive	Indirect	H12A_1-H12A_9: eXtraversion will be positively associated with each of the OGD-related Nine technology adoption factors
		Moderating	H12B_1-H12B_9: The relationship between each of the OGD-related Nine technology adoption factors and BI is stronger for individuals with higher eXtraversion
Agreeableness (A)	The extent to which an individual is humble, acquiescent and frank as against being non-conforming, ill-tempered and moody	Indirect	H13A_1-H13A_9: Agreeableness will be positively associated with each of OGD-related Nine technology adoption factors
		Moderating	H13B_1-H13B_9: The relationship between each of OGD-related Nine technology adoption factors and BI is stronger for individuals with higher Agreeableness
Conscientiousness (C)	The extent to which individual is systematic, reliable, meticulous and demanding as against being messy, unreliable, lacking resolve and accomplishment orientation	Indirect	H14A_1-H14A_9: Conscientiousness will be positively associated with each of OGD-related Nine technology adoption factors
		Moderating	H14B_1-H14B_9: The relationship between each of OGD-related Nine technology adoption factors and BI is stronger for individuals with higher Conscientiousness
Openness to Experience (O)	The extent to which an individual is creative, variety-seeking, exploring their internal feelings and having non-conservative values as against having conventional values, invariability and preference for the routine	Indirect	H15A_1-H15A_9: Openness to Experience will be positively associated with each of OGD-related Nine technology adoption factors
		Moderating	H15B_1-H15B_9: The relationship between each of OGD-related Nine technology adoption factors and BI is stronger for individuals with higher Openness to Experience

Performance Expectancy-Behavioral Intention relationship [42]. Furthermore, in another instance, non-conclusive findings were derived for this trait vis-à-vis the Behavioral Intention to adopt and use the technology [25]. With regard to the specific case of OGD adoption and usage, it is hypothesized that users with high scores across this trait are more likely to adopt and use OGD given the extent of varied and heterogeneous datasets being re-used at the same time for value creation and innovation pursuits (H15A\_1-H15A\_9; H15B\_1-H15B\_9).

### 3 METHODOLOGY

#### 3.1 Data Collection

Students who are actual or potential "OGD academics/users" were considered respondents in this study, representing a variety of

fields of study and OGD-specific needs and skills. Therefore, purposive and convenience sampling procedures were adopted to solicit responses from 530 currently-enrolled undergraduate and postgraduate students in a leading Indian private university. A Google Form with the structured questionnaire in English language was shared with the "actual" OGD users via email or WhatsApp after a brief interaction regarding the purpose of the study. The responses were collected over a period of 7 months (May, 2022 until November, 2022). The items were scaled across a Likert-scale (1-Strongly Agree and 5-Strongly Disagree). All instrument items and a complete set of questions can be found in Appendix<sup>1</sup>. Table 3 summarizes the demographic characteristics of the sample.

<sup>1</sup>Instrument items and a complete set of questions

**Table 3: Summary of demographic characteristics**

Characteristic	Frequency	%	Characteristic	Frequency	%
Male	283	53.4	Gender		
			Female	247	46.6
16-20 years	332	62.6	Age		
26-30 years	5	0.9	21-25 years	190	35.8
			Above 30 years	3	0.6
Bachelor's	500	94.3	Education		
			Master's/PhD's/PostDoc's	30	5.7
Engineering	217	40.9	Field of Study		
Law	44	8.3	Humanities and Social Sciences	111	20.9
Nursing/Medical	6	1.1	Management/Commerce	74	14.0
Other	41	7.7	Hospitality/Hotel Management	41	7.7
			Year of Study		
1 <sup>st</sup> year	59	11.1	2 <sup>nd</sup> year	37	7.0
3 <sup>rd</sup> year	269	50.8	4 <sup>th</sup> year	157	29.6
5 <sup>th</sup> year	3	0.6	Other	5	0.9

### 3.2 Data Analysis

Partial Least Squares (PLS)-Structural Equation Modelling (SEM) method was deployed via SmartPLS 3.3.9 software to undertake the empirical investigation [48]. To explain the context of the personal trials influence OGD adoption and usage, two experimental steps were realized:

*Step 1.* Developing two research models to consequently investigate how and to what extent personality traits (i) indirectly, and (ii) as a moderator affect the behavioral intention to use and adopt OGD.

Research Model 1. Examines the *indirect* effects of personality traits (HEXACO) on users' behavioral intention to use OGD through the user's technology adoption (adapted UTAUT). Thus, we test the (i) hypotheses direct linking the personality traits to each of OGD adoption factors (H10A-H15A) and (ii) contextual hypotheses outgoing from users' technology adoption that to behavioral intentions to use OGD in the future (H1-H9).

Research Model 2. Examines how HEXACO personality traits *moderate* the effect of technology adoption model (adapted UTAUT) factors on users' behavioral intention to use OGD. In this model, we test hypotheses linking the influence of personality traits (H10B-H15B) on the relationship between each of the UTAUT adoption model factors and behavioral intention (H1-H9).

The result of this stage should be a sample of personality traits that demonstrate their *significant* impact on behavioral intention to use and adopt OGD, performing the role of an indirect or/and moderating factor.

*Step 2.* Building and exploring the Final Research Model that (i) aim to explain the comprehensive nature of the influence of personal trials on the use and adoption of OGD, and (ii) includes selected factors for which significant indirect and mitigating effects were identified in step 1.

**3.2.1 Measurement model assessment.** Reliability assessment (Cronbach's alpha ( $\alpha$ ) and Composite reliability (CR)) is summarized in Table 4. Since all the values range between 0.778 and 0.9

( $\alpha$ ) and 0.711 and 0.955 (CR) [49], the internal consistencies are upheld. Furthermore, the discriminant validity was also ascertained given that the correlation matrix did not have the inter-construct correlations exceeding 0.7 [50].

a. Cronbach's alpha should exceed 0.60, b. Composite Reliabilities should exceed 0.60 but below 0.90,

c. Average Variance Extracted values should exceed 0.50

**3.2.2 Structural models analysis.** The examination of the structural models was carried out to test the hypotheses put forward in the process of building the research model. The structural models were estimated with a bootstrapping of 5000 iterations.

*Research Model 1.* Regarding the *direct* effects of the UTAUT constructs on the Behavioral Intention to adopt and use OGD (H1-H9), two out of the nine hypotheses were supported. BI to use OGD is very strongly positively affected by Trusts (H9:  $\beta = 0.617$ ,  $p < 0.01$ ) and also positively affected by Performance Expectancy (H1:  $\beta = 0.09$ ,  $p < 0.05$ ), substantially explaining 75.1% ( $R^2 = 0.751$ ) of the variance in the dependent variable.

Regarding the *indirect* effects of the HEXACO traits (H10A-H15A), fourteen (14) out of the 54 hypotheses were supported (Table 4). *Emotionality* is significantly negatively mediated by System Quality (H11A\_6:  $\beta = -0.213$ ,  $p < 0.05$ ); and Information Quality (H11A\_7:  $\beta = -0.222$ ,  $p < 0.05$ ) perception. *Agreeableness* is significantly positively mediated by Social Influence (H13A\_3:  $\beta = 0.211$ ,  $p < 0.05$ ); and Voluntariness of Use OGD (H13A\_5:  $\beta = 0.278$ ,  $p < 0.01$ ). *Conscientiousness* is also significantly positively mediated by System Quality (H14A\_6:  $\beta = 0.185$ ,  $p < 0.05$ ), Information Quality (H14A\_7:  $\beta = 0.179$ ,  $p < 0.05$ ), Data Quality (H14A\_8:  $\beta = 0.212$ ,  $p < 0.05$ ); and also Trust (H14A\_9:  $\beta = 0.191$ ,  $p < 0.05$ ) to OGD. *Openness to Experience* personal trial is significantly positively mediated by Performance Expectancy (H15A\_1:  $\beta = 0.369$ ,  $p < 0.01$ ), Effort Expectancy (H15A\_2:  $\beta = 0.383$ ,  $p < 0.01$ ), Social Influence (H15A\_3:  $\beta = 0.327$ ,  $p < 0.01$ ), Facilitating Conditions (H15A\_4:  $\beta = 0.465$ ,  $p < 0.01$ ), Information Quality (H15A\_7:  $\beta = 0.295$ ,  $p < 0.01$ ) and Trust (H15A\_9:  $\beta = 0.191$ ,  $p < 0.05$ ).

**Table 4: Reliability validation for latent constructs**

Construct	Cronbach's alpha ( $\alpha$ ) <sup>a</sup>	Composite Reliability (CR) <sup>b</sup>	Average Variance Extracted <sup>c</sup>	Construct	Cronbach's alpha ( $\alpha$ ) <sup>a</sup>	Composite Reliability (CR) <sup>b</sup>	Average Variance Extracted <sup>c</sup>
UTAUT constructs							
Performance Expectancy	0.900	0.930	0.769	Effort Expectancy	0.839	0.893	0.675
Social Influence	0.890	0.932	0.820	Facilitating Conditions	0.859	0.934	0.876
Voluntariness of Use	0.784	0.863	0.615	Data Quality	0.879	0.917	0.734
System Quality	0.907	0.932	0.733	Information Quality	0.877	0.924	0.802
Trust	0.929	0.955	0.875	Behavioral Intention	0.898	0.936	0.831
HEXACO constructs							
Honesty-Humility	0.807	0.835	0.284	Extraversion	0.812	0.850	0.267
Emotionality	0.782	0.831	0.240	Agreeableness	0.805	0.844	0.256
Conscientiousness	0.812	0.797	0.257	Openness to Experience	0.778	0.711	0.266

*Research Model 2.* Regarding the *moderating* effects of the HEXACO traits (H10B–H15B), three (3) out of the 54 hypotheses were supported (Table 4). In line with our expectations, the relationships between Information Quality and BI are positively moderated by *Honesty-Humility* (H10B\_7:  $\beta = 0.239$ ,  $p < 0.05$ ), but, against our expectations, the relationships between Information Quality and BI was negatively moderated by *eXtraversion* (H12B\_7:  $\beta = -0.251$ ,  $p < 0.05$ ). In turn, the relationship between Trust and BI, as we expected, is positively moderated by *eXtraversion* (H12B\_9:  $\beta = 0.320$ ,  $p < 0.05$ ). The significance of Performance Expectancy and Trusts direct effects on the Behavioral Intention (H1 and H9) were also confirmed. Research model 2 explains 81.3% of the variance in the dependent variable ( $R^2 = 0.813$ ).

*Final model.* Examining the structural model of constructed Final (combined) model was carried out to test the significant 14 indirect and three moderating effects of personality traits, identified, respectively, when testing research models 1 and 2.

Regarding the *indirect* effects of the HEXACO traits, twelve (12) out of the 14 hypotheses were supported. *Emotionality* has confirmed its significant negative impact on OGD System Quality (H11A\_6:  $\beta = -0.155$ ,  $p < 0.01$ ) and on Information Quality (H11A\_7:  $\beta = -0.208$ ,  $p < 0.01$ ). *Agreeableness* has confirmed significant positive impact only on Social Influence (H13A\_3:  $\beta = 0.182$ ,  $p < 0.01$ ). *Conscientiousness* has confirmed three out of four significant positive effects on the level of an individual's perception of OGD System Quality (H14A\_6:  $\beta = 0.379$ ,  $p < 0.01$ ), Information Quality (H14A\_7:  $\beta = 0.226$ ,  $p < 0.01$ ), and Data Quality (H14B\_8:  $\beta = 0.278$ ,  $p < 0.01$ ). *Openness to Experience* has confirmed all significant positive effect on Performance Expectancy (H15A\_1:  $\beta = 0.437$ ,  $p < 0.01$ ), Effort Expectancy (H15A\_2:  $\beta = 0.419$ ,  $p < 0.01$ ), Social Influence (H15A\_3:  $\beta = 0.293$ ,  $p < 0.01$ ), Facilitating Conditions (H15A\_4:  $\beta = 0.455$ ,  $p < 0.01$ ), Information Quality (H15A\_7:  $\beta = 0.328$ ,  $p < 0.01$ ) and Trust (H15A\_9:  $\beta = 0.219$ ,  $p < 0.01$ ). Hypotheses H13A\_3 (Agreeableness  $\rightarrow$  Social Influence) and H14A\_9 (Openness to Experience  $\rightarrow$  Performance Expectancy) were not supported. Regarding the *moderating* effects of the HEXACO traits, none of the hypotheses about personality traits' moderation effect was confirmed (H10B\_7, H12B\_7 and H12B\_9).

As with two previous research models, in final model we confirmed that BI to use OGD is very strongly positively *directly* affected by Trusts (H9:  $\beta = 0.603$ ,  $p < 0.01$ ) and also positively affected by Performance Expectancy (H1:  $\beta = 0.098$ ,  $p < 0.05$ ), substantially explaining 75.6% ( $R^2 = 0.756$ ) of the variance in the dependent variable. The summary of all three Research models' results is presented in Table 5.

## 4 DISCUSSION

The present study deduced the final personality traits influence Open Government Data (OGD) adoption and usage model as shown in Figure 1 below.

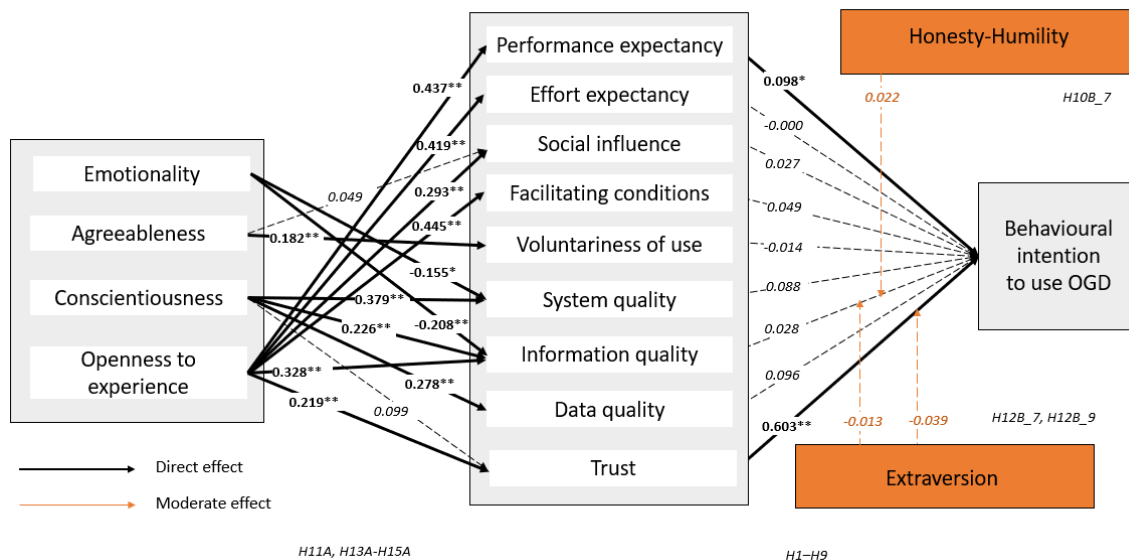
Regarding the *direct* relationships, Performance Expectancy-Behavioral Intention relationship was found to be strongly significant which is suggestive that the users regard OGD adoption and usage to have important bearing on their academic/work performance [51] [52]. Trust is also considered as important for the users while engaging with OGD [6]. Other direct relationships could not be supported partly owing to the academic background counting mostly the engineering cohort and all the users hailed from the urban area which made them comfortable with the internet access and prior experience with the OGD platforms. Likewise, quality parameters like System Quality, Information Quality and Data Quality are subjective in themselves [53] [54] [55] and not be an issue of concern for the students affiliated with the state-of-the-art information and communication technology (ICT) infrastructure of the varsity. Regarding the non-significant relationship of Voluntariness of Use-Behavioral Intention, previous research has shown that with adequate information-seeking behaviors and the availability of easy and functional internet access, Voluntariness of Use does not hold importance [56].

Regarding the personality traits' *indirect* effect on Behavioral intention through the OGD-related technology adoption factors, Thus, *Openness to experience* is the most important personality trait that consistently positively impacts six out of nine (66.67%) of OGD-related technology adoption factors, such as Trust, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Information Quality. Our findings prove that users'

**Table 5: Significant personality traits factors affecting BI to use OGD**

Path	H	Research Model 1 R <sup>2</sup> =0.751	Research Model 2 R <sup>2</sup> =0.813	Final Model R <sup>2</sup> =0.756
<i>Personality traits indirectly affect BI to use OGD through user's technology adoption</i>				
Emotionality -> System Quality	H11A_6	-0.213*	-	-0.155*
Emotionality -> Information Quality	H11A_7	-0.222*	-	-0.208**
Agreeableness -> Social Influence	H13A_3	0.211*	-	0.049 (ns)
Agreeableness -> Voluntariness of Use	H13A_5	0.278**	-	0.182**
Conscientiousness -> System Quality	H14A_6	0.185*	-	0.379**
Conscientiousness -> Information Quality	H14A_7	0.179*	-	0.226**
Conscientiousness -> Data Quality	H14A_8	0.212*	-	0.278**
Conscientiousness -> Trust	H14A_9	0.191*	-	0.099 (ns)
Openness to Experience -> Performance Expectancy	H15A_1	0.369**	-	0.437**
Openness to Experience -> Effort Expectancy	H15A_2	0.383**	-	0.419**
Openness to Experience -> Social Influence	H15A_3	0.327**	-	0.293**
Openness to Experience -> Facilitating Conditions	H15A_4	0.465**	-	0.455**
Openness to Experience -> Information Quality	H15A_7	0.295**	-	0.328**
Openness to Experience -> Trust	H15A_9	0.191*	-	0.219**
<i>Personality traits moderating the user's technology adoption affect BI to use OGD through user's technology adoption</i>				
Honesty-Humility *Information Quality -> BI	H10B_7	-	0.239*	0.022*
eXtraversion*Information Quality -> BI	H12B_7	-	-0.251*	-0.013 (ns)
eXtraversion*Trust -> BI	H12B_9	-	0.320*	-0.039 (ns)
<i>User's technology adoption direct effect on BI to use OGD through user's technology adoption</i>				
Performance Expectancy -> BI	H1	0.090*	0.118*	0.098*
Trust -> BI	H9	0.617**	0.559**	0.603**

Sig. \*p&lt;0.05; \*\*p&lt;0.01; ns: not significant

**Figure 1: Path coefficients of the final bootstrapped model (\*p<0.05; \*\*p<0.01)**



openness to new experiences in the OGD context may lead to slightly increased Effort Expectancy due to a greater propensity to explore all the features of a system or to conduct a broader search for relevant data [57]. This fact also can explain the desire to improve their Facilitating conditions allowing them to search, collect, store, analyze and visualize a large amount of OGD, which in turn will have a positive effect on Performance Expectancy. Moreover, we confirmed, that Openness to Experience positively affects the willingness of users to listen to people whose experiences are important to them (Social Influence), appreciate Information Quality and Trust in such new technologies.

*Conscientiousness* relationship with BI to use and adopt OGD is significantly mediated by System Quality, Information Quality, Data Quality and Trust. Our study supports the findings of [26] [39] [46] [47]. We can suggest, that Conscientiousness, should be seen as a factor of (i) increasing user requirements for all OGD elements quality (System Quality, Information Quality, Data Quality), and (ii) impact on both the perceived and actual use of the IT system [58] and on Trust if the required OGD quality level is confirmed.

*Agreeableness* has a positive effect on Social Influence and Voluntariness of Use. One dimension of agreeableness is related to the tendency to sacrifice one's own pleasures to please others [60], which may well explain the significant effect of agreeableness on the Voluntariness of OGD use. In addition, an Agreeable person is open to cooperation and strengthening relationships with people [61], which gives us reason to believe that he will also listen to people from his immediate environment (Social Influence).

*Emotionality* negatively affects the quality of the System Quality and Information Quality. In general, neuroticism has been found to be directly and negatively related to both perceived and actual use of the system, but is not significant for behavioral intention [46] [58]. It is known that more neurotic persons are less open to new experiences [62]. That is, we can assume that, for neurotics, the perceived factors associated with the expectation of effort are not important, since they are willing to overcome them in order to limit personal communication in the search for and study of data. However, the quality of the system and the quality of the information produced will matter, and due to the higher sensitivity of such people, any quality issues can have a significant negative effect.

As far as the *moderating* influence of the personality traits on the relationships (UTAUT-Behavioral Intention to adopt and use OGD) is concerned, it was inferred that: (1) *Honesty-Humility*\*Information Quality-Behavioral Intention (H10B\_7): Being fair, truthful, sincere and honest in the societal settings drives an individual to seek trustworthy and credible information [63] [64]. (2) *Extraversion*\*Information Quality-Behavioral Intention (H12B\_7): Individuals who are less social and gregarious are more likely to look for credible information via the OGD portals because they do not seek external support from others in most of the cases owing to their shyness [65]. (3) *Extraversion*\*Trust-Behavioral Intention: Introverts are more likely to have trust concerns while engaging with OGD on account of their insecurity and privacy perceptions [66] [67]. (4) Working together with other indirectly influencing personality traits, Honesty-Humility did "strengthen" the Information Quality-BI relationship, i.e. honest individuals are likely to consider the

importance of Information Quality for OGD adoption and usage, but *eXtraversion* "strengthened" the Trust-BI relationship, which implies that in contrast with the extroverts who have trust in OGD, the introverts are likely to be concerned about the security and privacy and hence they would attempt looking for credible and reliable OGD. Finally, extroverts would be more concerned about the Information Quality, i.e. the quality of the information retrieved via the OGD sources. It is valid when the rest of the personality traits directly affect OGD-related technology adoption factors.

## 5 CONCLUSIONS

Given the intensive research interest regarding the technology adoption and usage across different contexts (via UTAUT, TAM, TPB, etc.), the present study sought to investigate the OGD adoption and usage among the "actual" OGD users, viz., currently-enrolled the undergraduate and postgraduate students (n~530) from a leading private university in India. The specific case of the influence of personality traits (via HEXACO-100 inventory) on the UTAUT-Behavioral Intention to adopt and use OGD was empirically investigated by using the PLS-SEM method. The empirical results indicated that users with higher Openness to Experience tend to have higher Effort and Performance Expectancy; are characterized by exposure to Social Influence; have higher level of Trust and positive experience of Facilitating Conditions and Information Quality. Agreeable people are more likely to Voluntarily Use OGD. Conscientiousness enhances the individual's perception of OGD quality-related factors. Excessive Emotionality affects negative perception to System and Information Quality issues. Findings from the study also show the significance of Honesty-Humility, i.e., higher the honesty, more the concern for Information Quality while adopting and using OGD whilst on the other hand, higher the introversion, more is the trust evinced for OGD adoption and usage. Lastly, the findings attest the conventional research findings wherein Performance Expectancy-Behavioral Intention and Trust-Behavioral Intention relationships are stronger such that the OGD adoption and usage is considered to be impacting the work/academics performance apart from the fact that credible and reliable OGD is important for being adopted and used by the users [17] [52] [53].

From a *theoretical* perspective, our study underscores that personality traits are a strong determinant of the behavioral intention towards OGD adoption and usage and this line of research needs to further evolve across other contexts. As for the non-significant relationships in the present study, it may be argued that students' personality traits have different implications across technologies' preferences, learning-goal orientations and achievement-motivations [68] [69], and, these determinants might be considered in further studies as well with respect to OGD adoption and usage. The study was undertaken in a developing country and this is an important academic implication wherein further research ought to be conducted in developed countries and/or a comparative assessment be made between the developed and developing countries with regard to the influence of personality traits on the OGD adoption and usage behaviors given the cultural differences among the users.

From a *methodological* perspective, we contribute by introducing an approach of incrementally building and evaluating a combined

model that provides an understanding of the nature of the consolidated (moderating and indirect) type of effect of personality traits on behavioral intention to adopt and use OGD. Finally, the study contributes towards unraveling the implications of personality traits for technology adoption research in general and OGD research in specific. As such, there were convergent and divergent findings in terms of the role of personality traits at the individual level across OGD vis-à-vis other technologies thereby calling the need for furthering up this research contours in the domain of behavioral public administration.

The present study leaves significant insights for the *practitioners* too. Apart from making the OGD initiatives sustainable through strategic planning and execution, it is important that the quality metrics should be accorded priority. Furthermore, the demand-supply equation between the OGD suppliers and the OGD users should be matched in line with the users' expectations and applications. Finally, OGD initiative should be as inclusive as possible with the facilitating tools and techniques made available via the OGD web platforms.

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