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Business Research Methods and Methodology in Practice: Understanding the Advanced SmartPls Path Models in Structural Equation Modeling

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Abstract

The purpose of this paper is to advocate the use of SmartPLS in scientific research by adopting business methodologies and variables, namely discipline, good governance, and probity. The aim is to present the findings and data analysis using SmartPLS 4.1.1.4 components. The study population comprised 187 students in the Level 300 HRM class, and a sample size of 126 was determined using Krejcie and Morgan's (1970) formula. The results were based on factor loadings, discriminant validity, composite reliability, and collinearity statistics. The findings indicate that the outer loadings with appropriate p-values indicate that the majority of the factors are significantly loaded. But it is not a surprise that 1a. <- Good Governance, 1c. <- Good Governance, and 2a. <- Control of Corruption is not significantly loaded because it means that there are certain effects that affect Good Governance and the control of corruption. Responsibility and Discipline failed the discriminant validity test, indicating that the Follow Responsibility factor and the Discipline variable were not in agreement with the measurement, implying that certain factors affect this variable-factor relationship. SmartPLS 4.1.1.4 App was used to run the data.

Keywords: Factor Loadings, Construct Reliability and Validity, Discriminant Validity, Collinearity statistics (VIF), Pre-testing, Pilot Testing, Discipline, Good Governance, Probity

Introduction

The main purpose of this paper is to present a practical scientific overview of the methodology for analyzing SmartPLS results and their effects, and to encourage future researchers to adopt the best quantitative approaches. SmartPLS is a research tool or app used to scientifically define path models among variables. The aim is to elaborate on the technicalities and styles of presenting SmartPLS findings, with components that underscore the research's significance. The objective is to serve as an enhancement and resource to help young

researchers better understand and adopt SmartPLS in their methodological design, and to build knowledge as part of this objective.

Literature Review

Business Research Methods Vs Methodology

Business research is a type of business activity that involves preparing data collection, analyzing the information received, interpreting it, and forming data findings (Kramarenko, 2022). At the preparation stage for population and sample size determination and data collection, tasks are set, and research methods are selected.

Mexon & Kumar (2020) discussed business research as the systematic collection and analysis of data to answer problems facing management or executives. Business research can also be used to solve business-related problems, for example, determining how to reduce excess inventory in the organization.

In these views, Mexon & Kumar (2020) wrote that research methods encompass all approaches, techniques, and procedures used to conduct research. Thus, research techniques or methods are the approaches researchers use to conduct research. The two main research approaches to consider are quantitative and qualitative. On the other hand, research methodology refers to the systematic methods used to solve research problems; it is the science of conducting research. These involve the various steps generally adopted by the researcher to study the research problems and address existing gaps. Therefore, in simple terms, research methods are the techniques or approaches used in the research process, whereas research methodology refers to the scientific approaches the researcher uses to apply those methods.

Partial Least Squares Structural Equation Modeling (PLS-SEM) is regarded by some as an advanced statistical technique for analyzing and interpreting complex causal relationships among observed and latent variables. This was originally conceptualized and introduced by Herman Wold in the early 1980s as a statistical method tailored for econometric modeling (Chinnaraju, 2025). Moreover, Partial Least Squares Structural Equation Modeling (PLS-SEM) serves as a comprehensive methodological framework that critically addresses theoretical underpinnings through rigorous analytical approaches and state-of-the-art modeling techniques vital to contemporary business research (Chinnaraju, 2025).

This research presents empirical evidence on adapted variables, namely: Good Governance, Probity, and Discipline, used in the data gathering and analysis. Discipline is an independent variable, Good Governance is a dependent variable, and Probity is a Mediator variable. The various empirical literature on these variables are as follows:

Discipline and Good Governance

Research conducted by Mira and Hammadache, (2017) about the relationship between good governance and economic growth (discipline), indicated that several econometric research studies proved that there is a positive relationship between good governance in the sense of discipline and probity policies within market-enhancing governance (Kauffman &

Kray, 2003; Knack & Keefer, 1995). Even though good governance policy allows developing countries like Ghana to achieve only minimal economic advancement through political reforms, with the hope of reaching developed-state status. Additionally, following previous empirical studies on neo-institutionalism, the relationship among economic growth, societal discipline, and good governance is examined. This proved two divergent theories as state failure in the developing countries (Kauffman, *et al.,*1999, 2005; Knack & Keefer, 1995; Hall, and Jones,1999; Barro, 1996; Robert, 2002; Rodrik, 1995, 1996, 2004, 2006, 2007) that is components of good governance like corruption, instability of rights to property and lack of democracy, the other is the weak institutions are the cause to good governance.

Hence, the remedies are to foster discipline and probity for the integrity of governance (Khan, 2019, 2005, 2007). There is always a mismatch between policies and institutions for good governance practices (Mira & Hammadache, 2017). They assumed that good governance policies would only be relevant if developing countries reached an appreciable level of social and economic development, at which point institutions responsible for good governance could impose discipline to bolster good governance within their economies. Williams (1996), in his research on governance and the discipline of development, stated that good governance, as presented by the World Bank, is best understood and practiced in terms of discipline, as his studies showed. This means that the relationship between good governance and discipline is affirmative. Moreover, good governance presents an ideal situation in practice, where it interlocks with disciplinary practices: when the state is disciplined by society, society is also disciplined by the state. Hence, good governance and discipline are like birds with the same feathers. This article further suggested that the practice of theory and good governance provides insights into working ideology and the development of discipline. The study affirmed a clear association between good governance and efficient, effective administrative systems in a democracy (Wani, 2014; Martin, 2014).

Discipline and Probity

Whitton (2001) conducted research on the effective implementation of ethics in civil service and government, based on integrity and good governance among public officers. This was conducted across New Zealand, Australia, the UK, Korea, Canada, Ethiopia, and Morocco. The research stated that specific strategies to consider include identifying risks to integrity/probity, maintaining discipline, among other factors. It concluded that officers responsible for maladministration can be disciplined by their employers to improve integrity and probity. Research conducted by Mohd *et al. (2015) argued that the values of honesty, hard work, discipline,* and loyalty can predict Muslim Owner Managers through entrepreneurial orientation. The findings indicated that discipline and hard work, which are integrity and probity, are positively related to innovative orientations. This also explains that a Muslim owner-manager has religious values such as discipline, integrity, and probity. Shih *et al. (2015) examined differences among teachers and their backgrounds within the school environment; one of the research findings was that teachers aged 41 to 50 with master's or doctoral degrees demonstrated strong* integrity and discipline at that level. Both positive discipline and integrity have a significant impact on the delivery of instruction in public and private schools.

Central Bank of Ireland (2017) established a policy on guidance on fitness and probity standards, in which it stated that probity is a character acquired from a person's past behavior. That is, if a person is found to not possess probity qualities or features, such as a lack of integrity, honesty, and ethical judgment, then that person cannot be engaged in any serious business. Therefore, it is necessary to always consider due diligence first, which means discipline and probity are associated with one another. The Institute of Internal Auditors (2008) compiled a fact sheet on Probity, affirming that ethical behavior is evidence of the probity process and that it is complete uprightness, integrity, and honesty.

Probity and Good Governance

Shimawua (2016) conducted research on probity, ethics, and good governance in the public sector within Government and Administration and argued that current studies have shown that awareness among the general public regarding probity and matters of integrity in the public sector is very high. This study was conducted from different perspectives, such as organizational and individual, and explored ways to help government agencies meet expected standards. The best way to understand probity is to first think of the principles of ethical conduct, honesty, and transparent processes (Ombudsman, 2010). And that there is a clear association between the concepts of ethics and probity, whereby ethics is about the rights, fairness, and justice, and all these operate with Good Governance. Probity is about setting standards and values within organizations and ensuring that those standards/values are implemented through the enactment of policies and codes of conduct for Good Governance practice (Shimawua, 2016). It further stated that achieving effective governance depends on maintaining and developing appropriate and acceptable governance structures and frameworks, and on applying the governance systems the government chooses, with a commitment to operationalizing effective and efficient functioning. By and large, in recent times, there has been government scrutiny of their procurement and governance processes; therefore, there would be consequences for ignoring probity. Hence, the right culture must always be established and demonstrated, showing discipline and good governance.

The study of Good Governance is broad and therefore interacts with many factors within an organizational setting. Ibori (2015) examined the collapse of probity and good governance and found consensus that the lack of probity and accountability in governance is the main factor affecting the performance of African governments. This statement indicates a relationship between good governance and probity in the management of public-sector businesses (Ibori, 2015). This was based on the researcher's research findings and analyses. Researched on probity principles with good governance and culture, and in their discussion, they stated that documented policies and procedures in governance do not guarantee that the workers will understand what they are, but rather through active promotion of Probity and Good Governance principles, which is a clear affirmative findings statement (Ibori, 2015). According to General Knowledge Today, (2018), the position on probity in governance where it stated that the constitutions and laws serve as a legal framework for governance practice, together with probity, which is the uprightness, integrity, and the rules of conduct within the legal framework for the governance institutions and the relationship of government and the people to flourish. This simply means that government organizations are set up to effect Good

Governance and must comply with the constitution and the legal framework through Probity principles. The importance of applying the principles of good governance to achieve a brighter future for a nation or a company can be realized through a framework of accountability for such practices (Zirman & Oktari, 2022).

Probity

Probity is important for both public sector governance and private corporations. Shimawua (2016) conducted research on public perception of Probity in public service and its impact on sustainable development and confirmed that acceptable conduct (Discipline) and standards established by the state (Good Governance) cannot be compromised, and therefore, all public service personnel must demonstrate Probity at all levels for sustainable development. Hence, this will bring Good Governance to bear.

Definition of Terms

Discipline: In a behavioral context, discipline is, in practice, the control of a person's behavior through the regulation of actions in accordance with established expectations, rules, and goals, guided by self-control and consequences for noncompliance.

Good Governance: This is derived from the term "governance," and the opposite is "bad governance." It is a process by which institutions or corporate entities ensure that all systems, policies, and processes designed and established to achieve the objectives are strictly followed and complied with, without any deviation from the original plan. In other words, good governance has 8 major characteristics according to the United Nations: consensus-oriented, participatory, transparent, accountable, effective and efficient, responsive, rule of law, and equitable and inclusive.

Probity: This is the act of being equitable and fair by showing evidence of ethical behavior in practice by following or adopting well-designed procedures and processes to ensure that decisions are transparent, fair, and defensible. It also relies on transparency and accountability in decision-making within the procurement process and in behavioral attitudes towards decision-making.

Research Method

This is a scientific design using quantitative methods to demonstrate the display of SmartPLS App in defining variable paths. SmartPLS is a software that shows a graphical user interface for variance-based structural equation modeling (SEM) using the Partial Least Squares (PLS) path modeling method (Hair et. al., 2022). The target population was the University of Education, Winneba, students at level 300 of the Department of Management Sciences. The population was 187, and the sample size of 126 was deduced using Krejcie and Morgan's (1970) formula. A questionnaire was designed in Google Forms with Likert-scale items and administered to collect data.

Instrument Development

The questionnaire for this research was adapted from previously established research and data collection methods across various theories. It has been carefully adopted, and a few portions have been edited to suit the purpose of this research. It has been grouped and categorized into three different sections. Section A is about Good Governance (Dependent Variable), Section B is about Discipline (Independent Variable), and Section C is about Probity (Mediator Variable). These are all subdivided into subheadings for clarity of data presentation. Tronvoll (2011) argued that their questionnaire included components of the baseline conditions or services of governance and corruption, and had an experimental component assessing both negative and positive changes in the quality of government in terms of dealing with government, trust, and future satisfaction. Table 1 below was concluded after the pre-testing and piloting of the questionnaire.

Table 1: Instruments in the Questionnaires as adopted

Section	Sources	Variables	Number of Items
A		**Good Governance:**	
	GBS (2010)	*Quality of Good Governance.....	5
	GBS (2010)	*Corruption Control.....	2
B		**Discipline:**	
	Tronvoll (2011)	* Follow Responsibilities - Satisfaction with government service.....	4
	GBS (2010)	* Follow Responsibilities - Satisfaction with government service.....	6
	GBS (2010)	*Fairness – Transparency.....	8
C		**Probity:**	
	GBS (2010)	*Integrity.....	7
	OECD (2012)	*Integrity.....	8
	Otoghile *et al.,* (2014)	*Integrity.....	
		TOTAL QUESTIONS	**44**

Section A. – Good Governance

The researcher used and adopted three instruments in this section, namely the Euromed Survey (2017) and the GBS (2010). IEMed represents the European Institute of the Mediterranean; GBS represents the Global Barometer Survey; and USAID represents the United States Agency for International Development. IEMed is a consortium comprising the Catalan Government, the Barcelona City Council, and the Spanish Ministry of Foreign Affairs and Cooperation. Global Barometer Surveys is a collaborative research project on six barometers regionally, including Africa, which is known as Afrobarometer, East and Southeast Asia (Asian Barometer), South Asia (South Asia Barometer), Central and South America (Latino Barometro), the Middle East (Arab Barometer), and countries of the Soviet Union (Eurasia Barometer). It measures, at a mass level, the current social, political, and economic

climate worldwide, offering an independent, nonpartisan, scientific, and multidisciplinary view of public opinion on a broad range of government policies and other relevant issues. The GBS network is over 70% of the world's population, and it's still expanding. USAID is an American international organization that leads humanitarian efforts to save lives, strengthen democratic governance, reduce poverty, and more. The researcher chose these instruments for this section because the questions are directly relevant to and address the thesis's objective. Also, it is easy to administer to the target population. This instrument measures the areas of general perspective, democratic governance process, Control of Corruption, and quality of governance.

Table 2: Distribution of Good Governance Items

Elements	**Question No.**	**Number of Items**
Quality of Governance (QoG)	1	1a to 1e
Control of Corruption (CoC)	2	2a to 2b

Section B. Discipline

The research combines several sub-instruments to assess how discipline governance systems and policies should or must be structured. These are in the areas of trustworthiness, fairness, adherence to responsibilities and procedures, and cultural norms. Here, the instruments are adopted from Tronvoll (2011), Court (2001), and GBS (2010) as appropriate. GBS, as discussed in section A, is more relevant to the thesis's objectives. Tronvoll (2011) research survey was on citizens' attitudes to good governance and corruption. It has all the indications of discipline, policies, and people's behaviors towards governance. Hence, it is ideal for the thesis's purpose and objective. This was conducted under ILPI (International Law and Policy Institute) in Zanzibar. Court (2001) is a co-director of the World Governance Survey (WGS) project together with Goran Hyden. They conducted a comprehensive national assessment of governance in India. The researcher found it necessary to adopt portions of this questionnaire to fulfil some of the objectives of this thesis, thereby improving the presentation of data and analysis.

Table 3: Distribution of Discipline Items

Elements	**Question No.**	**Number of Items**
Follow Responsibilities – satisfaction with government service	3	3a to 3d
Follow Responsibilities – satisfaction with government service	4	4a to 4f
Fairness	5	5a to 5h

Section C. Probity

The researcher adopted instruments such as Integrity from GBS (2010), OECD (2012), and Otoghile et al. (2014). OECD stands for the Organization for Economic Co-operation and Development. The OECD's mission is to promote policies that improve the economic and social well-being of people worldwide. And thereby, it provides a platform for governments to work together by sharing ideas and experiences and seeking solutions to their economic problems. Otoghile *et al. (2014) wrote a* research paper on the quest for good governance in Nigeria: a survey of people's perception in Benin City. It includes guidance on government

policy assessment in the module, which has been adopted because it aligns with the general objective of this thesis. GBS ensures that data are comparable and reliable by sharing a common research agenda that explores citizens' attitudes towards democracy, political reforms, and governance. Hence, GBS has, over the years, established standardized questionnaire modules across all the regions it operates, while also allowing the regions to retain their own specific items that reflect particular local concerns. The questionnaire was designed using a mixed-methods approach, including Likert-scale items and descriptive questions to collect both qualitative and quantitative data for analysis.

Table 4: Distribution of Probity Items

Elements	**Question No.**	**Number of Items**
Probity – Integrity general	6	6a to 6f
Probity	7	7a
Integrity in the Government Financial Sector for Projects and Investment	8	8a to 8g

Result and Discussion

Pre-test of the Questionnaires Results

After the questionnaire was designed based on various sources, a pre-test was conducted with 10 respondents. The respondents were part of the target population for this research, namely Level 300 Students. First of all, the pre-test was done to ascertain its relevance for efficiency and effectiveness, accuracy, and content validity. Pre-testing was also conducted to determine the strengths and weaknesses of the adopted questionnaires as designed. There are two main types of pre-testing, namely participating and undeclared. Participating means participants were told the questionnaire was for a practice run and, in this case, were asked to explain their reactions to its form, order, and wording. The purpose was to enable the researcher to determine whether they fully understood the questionnaire. On the other hand, in the undeclared pre-testing, the respondents were not told it was a pre-test, so they answered it as their real opinions. Hence, it helped the researcher deduce the type of analysis and the standardization of the questions to be adopted. Henceforth, the two types of pre-tests were conducted. According to Converse & Presser (1986), it is important and good practice for researchers to conduct participatory research, followed by an undeclared pre-test. With this, the variation of the questions, meaning, difficulty, respondents' interest, and attention will all be known and captured. Above all, it means that the questionnaire's reliability and validity can be assessed by comparing one pre-test with another from respondents/participants (Weisberg *et al.,* 1989).

The following were the ratings method used for the pretesting of the predesigned questionnaires which had in total of 47 questions at first for Quantitative survey and 50 questions for Qualitative interview, sub-questions inclusive in all, which subsequently reduced to a number of 44 questions for Quantitative survey and 45 questions for Qualitative interview

after complying with the pre-test comments, meaning some questions were deleted respectively.

Relevance rating:	**Simplicity rating:**
A1- Not Relevant	**B1**- Not simple
A2- Item needs some revision	**B2**- Item needs some revision
A3- Relevant but need minor revision	**B3**-Simple but need minor revision
A4- Very relevant	**B4**- Very simple

Figure 1: Pre-test of Questionnaire Ratings

Five participants were engaged as members of the class to rate the predesigned questionnaire using a participatory method, in which they rated the questions according to the above options. The results per observation and analysis of the pre-tested questionnaires are shown in the tables below:

Table 5: Pre-test Results for Relevance Rating

	A1	**A2**	**A3**	**A4**	**Total Responses Expected**
Quantitative survey	3	23	83	361	**470**
Qualitative survey	5	51	26	418	**500**

Note:** 10 questionnaires were pre-tested in each case. Hence, 10 x 47 = **470**; 10 x 50 = **500

Table 6: Pre-test Results for Simplicity Rating

	B1	**B2**	**B3**	**B4**	**Total Responses Expected**
Quantitative survey	5	11	52	402	**470**
Qualitative survey	2	45	13	440	**500**

The above tables show that 361 and 402 ratings represented very relevant and very simple, respectively, for the Quantitative survey questionnaire. Meanwhile, the 418 and 440 ratings represent, respectively, very relevant and very simple for the Qualitative interview questionnaire. The tables above show that 3 Quantitative survey questions and 5 Qualitative interview questions were deleted as appropriate. General remarks by participants after the exercise were that "some items need to be revised; good work done. It is involving," and another one stated, "generally, questions are relevant and simple to be rated. Not much difficulty will be encountered by any graduate or undergraduate who works on this questionnaire." In view of these observations, the researcher decided to review the questionnaire by editing it to the level of piloting. Many more questions were deleted, and some were edited accordingly before piloting. Moreover, another pre-test was conducted using the predesigned questionnaires, administered via an undeclared method, with respondents filling in the answers. In fact, the questionnaires were almost 100% completed without difficulty. With the results from these two pretested sessions, the final questionnaire, informed by other theories and relevant sources, can stand the test of Good Governance, Discipline, and Probity and, more importantly, serve the purpose of qualitative and quantitative analysis within a mixed-methods approach. This means the content is better suited to testing at the pilot stage, given the overwhelmingly high ratings for relevance and simplicity.

Pilot Study

Table 7: Results of the Pilot Study for reliability and validity of Constructs

Variables	Number of Items	Conbach Alpha
Discipline:		
Fairness	8	0.882= 0.8
Follow Responsibilities	10	0.289= 0.3
Good Governance	7	0.707= 0.7
Probity – Integrity in the Government Financial Sector	8	0.695= 0.7
Probity	7	0.681= 0.7

Findings and Analysis

Table 8: Outer Loadings

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Implication
1a. <- Good Governance	0.326	0.301	0.263	1.241	0.215	not significantly loaded
1b. <- Good Governance	0.537	0.501	0.197	2.722	0.007	significantly loaded
1c. <- Good Governance	0.377	0.348	0.219	1.719	0.086	not significantly loaded
1d. <- Good Governance	0.650	0.598	0.165	3.948	0.000	significantly loaded
1e. <- Good Governance	0.684	0.615	0.231	2.964	0.003	significantly loaded
2a. <- Control of Corruption	0.417	0.349	0.491	0.848	0.396	not significantly loaded
2b. <- Control of Corruption	0.978	0.815	0.278	3.513	0.000	significantly loaded
3a. <- Discipline	0.596	0.586	0.128	4.639	0.000	significantly loaded
3b. <- Follow Responsibilities	0.230	0.219	0.148	1.557	0.119	not significantly loaded
3c. <- Follow Responsibilities	0.473	0.461	0.109	4.336	0.000	significantly loaded
3d. <- Follow Responsibilities	0.443	0.437	0.102	4.344	0.000	significantly loaded
4a. <- Discipline	0.903	0.898	0.047	19.020	0.000	significantly loaded

4b. <- Follow Responsibilities	0.760	0.758	0.053	14.220	0.000	significantly loaded
4c. <- Follow Responsibilities	0.791	0.793	0.033	23.859	0.000	significantly loaded
4d. <- Follow Responsibilities	0.682	0.675	0.069	9.816	0.000	significantly loaded
4e <- Follow Responsibilities	0.669	0.659	0.075	8.956	0.000	significantly loaded
4f. <- Follow Responsibilities	0.590	0.580	0.095	6.211	0.000	significantly loaded
5a. <- Fairness	0.629	0.612	0.101	6.211	0.000	significantly loaded
5b. <- Fairness	0.491	0.482	0.112	4.369	0.000	significantly loaded
5c. <- Fairness	0.678	0.664	0.083	8.179	0.000	significantly loaded
5d. <- Fairness	0.500	0.485	0.124	4.018	0.000	significantly loaded
5e. <- Fairness	0.681	0.658	0.087	7.799	0.000	significantly loaded
5f. <- Fairness	0.558	0.537	0.117	4.766	0.000	significantly loaded
5g. <- Fairness	0.581	0.570	0.104	5.594	0.000	significantly loaded
5h. <- Fairness	0.484	0.474	0.111	4.374	0.000	significantly loaded
6a. <- Fairness	0.482	0.469	0.121	3.975	0.000	significantly loaded
7a. <- Fairness	0.550	0.538	0.104	5.307	0.000	significantly loaded
8a. <- Probity	0.418	0.409	0.118	3.557	0.000	significantly loaded
8b. <- Probity	0.325	0.317	0.135	2.415	0.016	significantly loaded
8c. <- Probity	0.353	0.341	0.139	2.545	0.011	significantly loaded
8d. <- Probity	0.039	0.035	0.156	0.253	0.801	not significantly loaded
8e. <- Probity	0.288	0.276	0.142	2.029	0.043	significantly loaded
8f. <- Probity	0.379	0.365	0.124	3.048	0.002	significantly loaded
9a. <- Probity	0.552	0.543	0.092	5.971	0.000	significantly loaded
10a. <- Probity	0.632	0.619	0.073	8.640	0.000	significantly loaded
10b. <- Probity	0.586	0.570	0.112	5.241	0.000	significantly loaded

10c. <- Probity	0.625	0.608	0.086	7.301	0.000	significantly loaded
10d. <- Probity	0.585	0.567	0.109	5.350	0.000	significantly loaded
10e. <- Probity	0.691	0.680	0.062	11.196	0.000	significantly loaded
10f. <- Probity	0.602	0.594	0.097	6.219	0.000	significantly loaded
10g. <- Probity	0.661	0.645	0.079	8.341	0.000	significantly loaded

From Table 8 above shows the outer loadings in bootstrap significance which indicates that the constructs paths to the individual factors or variables that have p-value of 0.000 and above are all significantly loaded.

Table 9: Outer weights

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Implication
1a. <- Good Governance	0.231	0.208	0.208	1.109	0.267	not significantly weighted
1b. <- Good Governance	0.399	0.364	0.155	2.565	0.010	significantly weighted
1c. <- Good Governance	0.235	0.210	0.162	1.449	0.147	not significantly weighted
1d. <- Good Governance	0.365	0.334	0.122	2.998	0.003	significantly weighted
1e. <- Good Governance	0.563	0.495	0.216	2.603	0.009	significantly weighted
2a. <- Control of Corruption	0.213	0.184	0.490	0.435	0.664	not significantly weighted
2b. <- Control of Corruption	0.932	0.769	0.286	3.260	0.001	significantly weighted
3a. <- Discipline	0.438	0.434	0.107	4.095	0.000	significantly weighted
3b. <- Follow Responsibilities	0.032	0.030	0.060	0.534	0.594	not significantly weighted
3c. <- Follow Responsibilities	0.148	0.143	0.047	3.162	0.002	significantly weighted
3d. <- Follow Responsibilities	0.176	0.170	0.052	3.405	0.001	significantly weighted
4a. <- Discipline	0.819	0.813	0.078	10.457	0.000	significantly weighted
4b. <- Follow Responsibilities	0.279	0.276	0.040	6.945	0.000	significantly weighted
4c. <- Follow Responsibilities	0.317	0.314	0.046	6.920	0.000	significantly weighted
4d. <- Follow Responsibilities	0.199	0.197	0.034	5.885	0.000	significantly weighted
4e <- Follow Responsibilities	0.212	0.210	0.041	5.169	0.000	significantly weighted

4f. <- Follow Responsibilities	0.176	0.173	0.048	3.673	0.000	significantly weighted
5a. <- Fairness	0.205	0.197	0.069	2.994	0.003	significantly weighted
5b. <- Fairness	0.155	0.150	0.062	2.499	0.012	significantly weighted
5c. <- Fairness	0.238	0.236	0.067	3.569	0.000	significantly weighted
5d. <- Fairness	0.136	0.128	0.072	1.897	0.058	not significantly weighted
5e. <- Fairness	0.151	0.143	0.061	2.474	0.013	significantly weighted
5f. <- Fairness	0.152	0.145	0.071	2.131	0.033	significantly weighted
5g. <- Fairness	0.192	0.189	0.063	3.047	0.002	significantly weighted
5h. <- Fairness	0.154	0.152	0.072	2.131	0.033	significantly weighted
6a. <- Fairness	0.164	0.161	0.073	2.244	0.025	significantly weighted
7a. <- Fairness	0.205	0.202	0.074	2.760	0.006	significantly weighted
8a. <- Probity	0.190	0.177	0.057	3.304	0.001	significantly weighted
8b. <- Probity	0.047	0.046	0.058	0.807	0.420	not significantly weighted
8c. <- Probity	0.079	0.074	0.055	1.424	0.155	not significantly weighted
8d. <- Probity	-0.003	-0.004	0.062	0.052	0.958	not significantly weighted
8e. <- Probity	0.054	0.053	0.055	0.991	0.322	not significantly weighted
8f. <- Probity	0.109	0.102	0.050	2.191	0.028	significantly weighted
9a. <- Probity	0.207	0.196	0.050	4.110	0.000	significantly weighted
10a. <- Probity	0.191	0.182	0.040	4.837	0.000	significantly weighted
10b. <- Probity	0.102	0.102	0.048	2.100	0.036	significantly weighted
10c. <- Probity	0.167	0.160	0.044	3.802	0.000	significantly weighted
10d. <- Probity	0.113	0.111	0.051	2.229	0.026	significantly weighted
10e. <- Probity	0.200	0.192	0.038	5.334	0.000	significantly weighted
10f. <- Probity	0.145	0.145	0.045	3.217	0.001	significantly weighted
10g. <- Probity	0.196	0.187	0.042	4.659	0.000	significantly weighted

From the above table 9 indicates that all the constructs or indicators to their corresponding factors or variables have outer weights that have p-value of 0.000 and above means that all are significantly weighted.

Table 10: Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Control of Corruption	0.359	0.918	0.691	0.565
Discipline	0.323	0.398	0.730	0.585
Fairness	0.764	0.771	0.824	0.323
Follow Responsibilities	0.742	0.798	0.809	0.367
Good Governance	0.372	0.398	0.649	0.285
Probity	0.768	0.799	0.815	0.264

The above Table 10 shows the construct reliability and validity of constructs such as control of corruption, with Composite Reliability (rho_a) and Average Variance Extracted (AVE) values of 0.918 and 0.565, respectively, indicating reliability and validity. The discipline construct has a composite reliability (rho_c) of 0.730 and an Average Variance Extracted (AVE) of 0.585, both indicating reliability and validity. Fairness constructs have Cronbach's Alpha of 0.764, Composite Reliability (rho_a) of 0.771, and Composite Reliability (rho_c) of 0.824, meaning that Fairness is most reliable and valid in this context. Follow Responsibility, which also has Cronbach's Alpha of 0.742, Composite Reliability (rho_a) of 0.798, and Composite Reliability (rho_c) of 0.809, indicating reliability and validity. On the other hand, Probity has Cronbach's Alpha of 0.768, Composite Reliability (rho_a) of 0.799, and Composite Reliability (rho_c) of 0.815, which were all reliable and valid. The only variable constructs that failed reliability and validity were Good Governance constructs.

Discriminant validity

Table 11: Heterotrait-monotrait ratio (HTMT) - Matrix

	Control of Corruption	Discipline	Fairness	Follow Responsibilities	Good Governance	Probity
Control of Corruption						
Discipline	0.225					
Fairness	0.408	0.877				
Follow Responsibilities	0.384	1.050	0.554			
Good Governance	0.641	0.662	0.777	0.473		
Probity	0.410	0.703	0.641	0.645	0.732	

Table 12: Heterotrait-monotrait ratio (HTMT) - List

	Heterotrait-monotrait ratio (HTMT)
Discipline <-> Control of Corruption	0.225
Fairness <-> Control of Corruption	0.408
Fairness <-> Discipline	0.877
Follow Responsibilities <-> Control of Corruption	0.384
Follow Responsibilities <-> Discipline	1.050
Follow Responsibilities <-> Fairness	0.554
Good Governance <-> Control of Corruption	0.641
Good Governance <-> Discipline	0.662
Good Governance <-> Fairness	0.777
Good Governance <-> Follow Responsibilities	0.473
Probity <-> Control of Corruption	0.410
Probity <-> Discipline	0.703
Probity <-> Fairness	0.641
Probity <-> Follow Responsibilities	0.645
Probity <-> Good Governance	0.732

Tables 11 and 12 above indicate that Heterotrait-Monotrait Ratio (HTMT), which Henseler et al. (2015) developed, simulates and demonstrates the lack of discriminant validity in the Fornell-Larcker criterion and cross-loading shortcomings by using the HTMT ratio. This HTMT ratio is the geometric mean of the heterotrait-heteromethod correlations of indicators across constructs measuring different phenomena, divided by the average of the monotrait-heteromethod correlations of indicators within the same construct. With a well-fitted model, heterotrait correlations are expected to be smaller than monotrait correlations because the HTMT ratio must be below 1.0 in the model table. Henseler *et al. (2015) established that if the HTMT ratio is less than 0.90, there is discriminant validity between the pair of reflective constructs; this cutoff point has also been used by Gold et al. (2001) and Teo et al. (2008)*. But Clark and Watson (1995) and Kline (2011) established a very stringent cutoff of 0.85. Therefore, the tables above show that apart from Follow Responsibility and Discipline, which have 1.050, which fails the discriminant validity, all the rest of the variable constructs proved and qualified with the discriminant validity.

Collinearity statistics (VIF)

Table 13: Outer model - List

	VIF
1a.	1.024
1b.	1.084
1c.	1.114
1d.	1.220
1e.	1.049
2a.	1.050

2b.	1.050
3a.	1.038
3b.	1.130
3c.	1.337
3d.	1.260
4a.	1.038
4b.	2.162
4c.	1.815
4d.	1.928
4e	1.525
4f.	1.515
5a.	1.463
5b.	1.480
5c.	1.438
5d.	1.358
5e.	1.696
5f.	1.462
5g.	1.646
5h.	1.260
6a.	1.264
7a.	1.396
8a.	1.224
8b.	1.249
8c.	1.298
8d.	1.193
8e.	1.315
8f.	1.284
9a.	1.299
10a.	1.474
10b.	1.704
10c.	1.511
10d.	1.609
10e.	1.649
10f.	1.705
10g.	1.604

Table 14: Inner model - Matrix

	Control of Corruption	Discipline	Fairness	Follow Responsibilities	Good Governance	Probity
Control of Corruption					1.037	
Discipline					1.195	1.000
Fairness		1.237				

Follow Responsibilities		1.237				
Good Governance						
Probity					1.234	

Table 15: Inner model - List

	VIF
Control of Corruption -> Good Governance	1.037
Discipline -> Good Governance	1.195
Discipline -> Probity	1.000
Fairness -> Discipline	1.237
Follow Responsibilities -> Discipline	1.237
Probity -> Good Governance	1.234

Tables 13, 14, and 15 above present Collinearity Statistics, also known as Variance Inflation Factors (VIFs), for inner values. Hair *et al.* (2010) argued that researchers should evaluate the data and results for issues related to influential outliers. Collinearity occurs when two indicators are highly correlated; when more than two indicators are involved, it is called Multicollinearity. Variance Inflation Factor (VIF) is a related measure of Collinearity, defined as the reciprocal of the tolerance. The term VIF is derived from the square root of the VIF (i.e., √VIF) as the degree to which the standard error has been increased due to the occurrence of Collinearity. Multicollinearity in OLS regression occurs when two or more independent variables are highly intercorrelated. It inflates standard errors and makes significance tests of the independent variables unreliable by preventing researchers from seeing the relative importance of one independent variable compared to another. Now the rule is that problematic Multicollinearity may occur when the VIF is greater than 4.0, though some use a cut-off of 5.0. Another rule for the VIF is when the tolerance is smaller than 0.25, and some use a cut-off of 0.20. In reflective models such as this, the variables are modelled as single predictors of the indicator variables, which are the dependent variables. Hence, in the reflective model measurement, Multicollinearity is not a problem, though in SmartPLS the outcome will show the VIF statistic for the outer measurement model, whether the measurement model is formative or reflective (Garson, 2016). But in either formative or reflective model, there is always the likelihood that multicollinearity occurs at the structural level, that is, the variables modelled cause the endogenous variable to be Multicollinear. Structural multicollinearity is an issue and problem in either formative or reflective models for the same reason as it is in the Ordinary Least Squares (OLS) regression models. Therefore, the above tables show that there is VIF which has passed the collinearity statistics test.

Model fit

Table 16: Fit summary

	Saturated model	Estimated model
SRMR	0.096	0.108
d_ULS	8.000	10.007
d_G	2.190	2.268
NFI	0.352	0.339

The table above shows that d_ULS and d_G have p-values greater than 0.05, indicating a good fit. But with SRMR and NFI the model could not meet the condition that SRMR is less than 0.08 and NFI is greater than 0.90.

Conclusion

The outer loadings of the factors, along with their corresponding p-values, indicate that most factors are significantly loaded. But it is not a surprise that 1a. <- Good Governance, 1c. <- Good Governance, and 2a. <- Control of Corruption is not significantly loaded because it means that there are certain effects that affect Good Governance and control of corruption. This means that the agreement that the measurement obtained was very low to support these questions. The outer weights also prove that 1a. <- Good Governance, 1c. <- Good Governance, and 2a. <- Control of Corruption is not significantly weighted, while the other factors have significant weights. It is also obvious that Good Governance constructs failed their reliability and validity test, meaning that the measurements are not in good agreement or do not support the variable constructs.

Responsibility and Discipline failed the discriminant validity test, indicating that the Follow Responsibility factor and the Discipline variable were not in agreement with the measurement, implying that certain factors affect this variable-factor relationship. The collinearity statistics show that the VIF has passed the collinearity test. The model fit statistics satisfy some components but not all. The d_ULS and d_G satisfied the Model Fit, while SRMR and NFI did not.

Research Implication

The major implication of this research is knowledge-based, as it uses SmartPLS in scientific research. It will pre-inform researchers on how to approach the findings and analysis of SmartPLS results. It also adds value to the narration of the variable factors and their theoretical measurement conclusions, in terms of p-values indicating significance for various theories, by the establishment.

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