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Statistical Software Packages (SSPs) Integration in Teaching and Learning of Statistics in Ghanaian Tertiary Institution

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Authors' contributions

This work was carried out in collaboration between all authors. Teamwork produced this manuscript, the author YDA undertook the initial write up and administered the questionnaires on his campus and statistical analysis and interpretation. Author SAA guided as he reads through and offer needed input and correction in the analysis and discussions and author EH did administered the questionnaires at his campus did proof reading. All authors read and approved the final manuscript.

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ABSTRACT

AIM: To address the impact of statistical software package integration in the teaching and learning of statistics by examining the effect of training lecturers in the use of statistical software packages SSP(s) on their intension to use the packages.
Study Design: The research used multimode survey technique.
Place and Duration of Study: University of Education, Winneba, Kwame Nkrumah University of Science and Technology, University of Mines and Technology, University of Energy and Natural Resources, from January –February, 2015.

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Methodology: In this study, quantitative research method was employed where 98 respondents made of lectures, demonstrators and teaching assistants were purposively selected from 4 public universities in Ghana. Data collected were subjected to Smart PLS second generation multivariate structural Equation Modeling (SEM) in the computation of relevant statistics.
Results: The results of the analysis indicate that there is a positive significant relationship between training programs university leadership organized for their lecturers in mathematics and statistical and the perceived ease of use, perceived usefulness, attitude and assertiveness of the lecturers to uses the SSPs and lecturer's intension to use SSPs.
Conclusion: The finding of this paper has confirmed the previous research output on the effectiveness of Technology Acceptance Model (TAM) framework and has further extended the theory of TAM to help predict the lecturer's intension to use statistical software packages in the teaching and learning of statistics.

Keywords: Technology integration; Statistical Software Packages (SSPs); statistics; TAM.

1. INTRODUCTION

Technology and its advancement play a vital role in teaching and learning of statistics and have brought a change in the way people think and do things. Integration of technology is perceived by educators as a very important tool for effective delivery of teaching at all levels of education. There has been loud call for urgent reforms in statistics education at all levels worldwide since it is used in a wide range of disciplines. With the complexity of today's world and the increase use of statistical analysis, educators are very much interested in providing sound conceptual knowledge of statistics and how to apply them correctly. On the other hand teaching and learning statistics is changing tremendously with the development of new technology and using technology can make tertiary teaching more efficient and effective according to [1,2]. Using technology can make tertiary teaching more efficient and effective. Technology has improve the quality of instructions, brought motivation in the learning process, encourages active participation of students in their learning process and necessary feedback at their own pace.

2. STATEMENT OF THE PROBLEM

The role Statistics plays in our daily lives are so vital such that it is important for every educator and learner to understand and know how to use and interpret it. Statistical methods of analysis help in data collection presentation interpretation analysis and drawing conclusion for and piece of research. Having this importance and usefulness in mind, the dilemma on how to cope with the new methods of teaching and learning of statistics from traditional chalk and board method deserves attention especially in developing countries for which Ghana is not an exception. There lies importance for educator, school leadership and government to adopt technology oriented method that will effectively assist learner to cope with statistical methods hence improve their understanding and interest. Having in mind the difficulty of students in understanding Statistic is a great worry to all educators.

This has pushed educator into dilemma on how to improve the academic achievement of students and their interest in understanding statistical methods. Integration of Technology in teaching and learning of statistics is the way out to help educators out of this problem. The study is very important in providing school leader and manager of tertiary institution the needed strategies to develop policies towards academic staff development on their intention to use statistical software packages in their statistics lectures. The Technology Acceptance Model (TAM) has been a widely adopted theory of integration and understanding student behavioral intension [3]. This research seeks to add to the literature on the theory of Technology Acceptance Modell (TAM) and how it can explain Ghanaian statistics lectures intension to use Statistical Software Packages. This study was designed to determine what factors explain the degree of technology integration into the teaching-learning process in Mathematical or Statistical education programs. This paper generally addresses the impact of statistical software package integration in the teaching and learning of statistics in tertiary institutions in Ghana.

2.1 Research Objectives

The specific objectives of this study will include.

i. To determine the critical factors that account for statistics lecturer's intention to use SSP(s) in teaching statistics.
ii. To evaluate the extent to which academic staff training in the use of statistical software packages can influence their intention to use SSP(s) in their future instruction and research work.
iii. To develop and test, using Structural Equation Modelling (SEM), a whether the Theory of Planned Behaviours could explain intentions to use SSP(s) by statistics lecturer.

2.2 Research Hypothesis

H1: Training the lecturer in the use of statistical software packages will not have significant Influence on Perceived ease of use of SSP(s) in lecturing.
H2: Training the lecturer in the use of statistical software packages will not have influence on perceived usefulness of SSP(s) in lecturing significantly.
H3: Training lecturer in the use of statistical software packages will not have any influence on lecturer assertiveness/attitude towards SSP(s) in lecturing.
H4: Lecturers intention to use statistical software packages in their lecture is not influenced by training lecturers get in the use of statistical software packages.
H5: Perceived usefulness statistical software packages will not have significantly positive influence on attitude towards the use of SSP(s) in lecturing.
H6: Perceived usefulness of statistical software packages software will not have significantly positive influence on intentions to use SSP(s) in lecturing.
H7: Perceived ease of statistical software packages will not have significantly negative influence on assertiveness/ attitude towards the use SSP(s) in lecturing.
H8: Perceived ease of use of statistical software packages will not have significantly negative Influence on assertiveness/attitude towards the use SSP(s) in lecturing.
H9: Attitude towards using statistical software packages will not have significantly positive Influence on Lecturer's intentions to use SSP(s) in lecturing.

3. THEORITICAL BACKGROUND

3.1 Conceptual Framework

The Technology Acceptance Model (TAM) has been adopted as the theoretical foundation and the conceptual framework for this paper as presented in Fig 1. It conceptualizes statistical software packages (SSPs) training as one of the facilitating condition variables that can positively influence perceived ease of use (PEoU), perceived usefulness (PU) and assertiveness towards the use of statistical software packages (ATTU) by statistics and mathematics lecturers. Since training is generally put in place to develop individual's skills, attitudes, interest, knowledge and competence in organization it is very important to integrate such competence by using statistical software packages in the teaching and learning process.

3.2 Relevant Literature

Technology has improved the quality of instructions, brought motivation in the learning process, has encouraged active participation of students in their learning process and necessary feedback at their own pace. Technology integration in the course and has provided students with the needed psychological incentives to work hard [4,5]. Technology integration has three major goals. First; it, encourages learners to think like expect thereby getting them to understand the processes involved in problem solving and critique the solution to the problem, second; it helps identify the way learners reason, in his case the focus is more on the learning process rather than the results and thirdly, technology integration helps improve the learners level of knowledge on what they already know [6]. Integrating technology into the introductory statistics course at the undergraduate level can be used to develop student's statistical thinking skills. Many author has discussed the role technology has played in improving statistical thinking and problem solving ability as well as broad meaning and the essential elements of statistical thinking [7-10].

There is a rising appreciation of the fact that, there is the need to change the way tertiary statistics is taught [5]. There is difficulty in motivating student to develop statistical thinking

in most traditional undergraduate statistics class considering the volume of course material being covered [8]. There is therefore the need to walk away from the traditional overview of statistics as a discipline that relies upon formulae and procedures and rather incorporate in the teaching and learning of statistics technology. It is also essential to present statistics as an interdisciplinary approach that allows the students to use statistics to answer real world situations and communicate statistically. Also it is essential to present statistics as an interdisciplinary approach that allows the students to use statistics to answer real world situations and communicate statistically. The laboratory and case study concept of teaching statistics and mathematics has been suggested [9,11]. This in their submission will help the learners grasp all aspects and extensions of the statistics and probability concept to prepare them for tools needed for the practical aspect of their study of mathematics and statistics. There has been a number of advocacy for the use of technology integration in education and has been suggested that provision should be made for students engagement in technology activities [12]. Proper use of technology and for that matter the use of technology in teaching has been found to increase students' academic performance outcome [12,13]. The use of digital divide has been found to have imparted significantly on the student academic performance which gives further implication that technology integration has its positive influence on performance. Hence integrating technology such as statistical software packages into teaching and learning of Statistics may contribute it quota to existing technology integration theory. Integrating technology into teaching and learning of mathematics has enabled students to visualize mathematics and promoted active learning strategies in some advanced countries although technology has not been used widely at other levels of mathematics education [14]. It is of this view that the paper wish to view the impact of Statistical software package integration in teaching and learning of statistics in Ghanaian Tertiary institutions.

4. MATERIALS AND METHODS

The design of this paper followed quantitative research approach. Four public universities in Ghana were selected. The selection was done purposively in the institutions where mathematics and statistics are offered as a course.

4.1 Research Design

The paper deploys quantitative research methodology using purposive sampling to select lecturers, demonstrators and teaching assistant in mathematics and statistics. The research used multimode survey technique to obtain data where questionnaires were administered to respondents. Four public universities in Ghana were sampled. The data collected was subjected to Smart PLS second generation multivariate structural Equation Modeling (SEM) in the computation of relevant statistics. The paper used sample of 98 respondents purposively selected from the participating institutions. The question administration done personally for lecturers and demonstrators at Kwame Nkrumah University of Science and Technology, University of Education Winneba but University of Mines and Technology as well as University of Energy and Natural resource were sent to colleague's lecturers and returned through mails.

4.2 Research Design

The study deploys quantitative research methodology using purposive sampling to select lecturers, demonstrators and teaching assistants in mathematics and statistics. Multimode survey technique was used to obtain data where questionnaires were administered to respondents. Four public universities in Ghana were sampled. Data collected were subjected to Smart PLS second generation multivariate structural Equation Modeling (SEM) in the computation of relevant statistics. A sample of 98 respondents purposively selected from the participating institutions was involved in the study.

4.3 Population and Sample

The study targeted all lecturers, Demonstrators and Teaching assistants in Ghana and the accessible population are the members of all the higher institutions selected to partake in this study. One hundred and twenty questionnaires were sent out and 98 of these questionnaires were returned representing a response rate of 82%.The justification for adding teaching assistants as well as demonstrators is the limited number of lectures in mathematics in theses selected institutions. The study made use of quantitative research method to obtain primary data through field research (survey) using questionnaires filled out by the respondent.

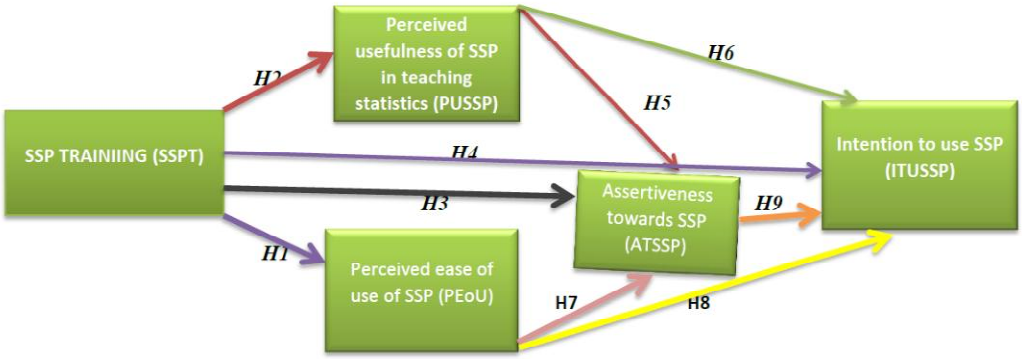

Fig. 1. The hypothetical model of structural relations among constructs

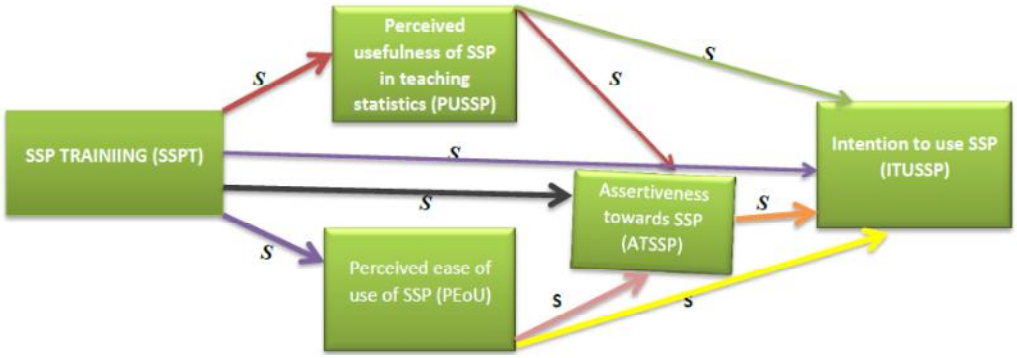

Fig. 2. The Final model of structural relations among constructs

4.4 Questionnaire Instruments and Measures

The items used in this study to assess the study constructs employed reflective scale where responses were scored using 5-point Likert agreement scales ranging from 1 strongly disagree to 5 strongly agree. The questionnaire items were adapted to refer specifically to the subject of statistics and mathematics and to suit the target group of lecturers in mathematics and statistics. The measures include four factors that influence the lecturer's intention to use statistical software package

- ❖ Attitude/assertiveness towards Statistical Software Packages(SSPs)
- ❖ Lecturers behavioural influence on intentions to use Statistical Software Packages(SSPs)
- ❖ Perceived usefulness and need for Statistical Software Packages(SSPs)
- ❖ The perceived usefulness of being trained in Statistical Software Packages(SSPs)
- ❖ Perceived ease of use of Statistical Software Packages (SSPs)

5. DATA ANALYSIS AND FINDINGS

The paper presented findings from the analysis conducted on the data collected in different forms, namely confirmatory factor analysis and structural equation modeling using Smart PLS.

6. DISCUSSION OF RESULTS

The validity and reliability of the measurement were estimated through some approaches following guidelines suggested by [15,16] for management research. This research used [17] two-stage approaches to test the model. The first stage examined measurement model while in the second stage hypothesized relationships were tested. Also Confirmatory factor analysis using smart PLS for measure reliability performed as discussed in the work of [18]. The outer loading of the measurements were found to be reliable with the square of each outer loading found to be greater or equal to 0.7. as shown in Table 5. The

internal consistency reliability of the construct was accessed using the composite reliability as presented in Table 1. The constructs reliability using their cronbach alpha values were tested to assess its significance but were all found to be significant as shown in Table 2. The result of the analysis indicates that the constructs are internally consistent with composite reliability values greater than 0.7 as shown in Table 1 [19,17,20]. In order to access convergent validity of the constructs, the average variance extracted calculated were found to be more than 0.5 and higher [19,17,20,3] The analysis further found the square root of the AVE of each latent variable and found to be greater than the correlation among the latent variables [17,21,22] as shown in Table 6. After the test of validity and reliability of all the latent variables gave valid and reliable result. The bootstrapping of 6000 samples yielded significant results with $p<0.000$ as presented in Table 3. The complete model test using SmartPLS program can be found from the R-square values that describes the goodness of fit of the model. The value of the R-square in Table 5 looks good as explaining their effect on the training. The hypothesis testing results on the nine hypotheses stated in this study as shown by the path model coefficient value for the various variables in Table 3 have proven to have positive and significant influence. There has been as strong correlation between the various construct as presented in Table 4. Theoretically, there is a proportional relationship between the lecturers training in using statistical software packages and the lecturers perceive ease of use, lecturers perceive usefulness, lecturers intension to use and the lecturers attitude or assertiveness towards the use of statistical software packages. The results the test further reveals that there proportional relationship between the perceive ease of use; perceive usefulness and attitude or assertiveness and the lecturers intension to use.

Table 1. Composite reliability

Constructs	Original sample (O)	Sample mean (M)	Standard error (STERR)	T statistics (|O/STERR|)	P values
ATSSP	0.936	0.936	0.018	53.395	0.000
ITUSSP	0.960	0.958	0.016	61.922	0.000
PEoU	0.768	0.751	0.078	9.864	0.000
PUSSP	0.901	0.881	0.078	11.505	0.000
SSPT	0.884	0.883	0.036	24.861	0.000

Table 2. Cronbachs alpha

Constructs	Original sample (O)	Sample mean (M)	Standard error (STERR)	T statistics (|O/STERR|)	P values
ATSSP	0.897	0.897	0.030	29.451	0.000
ITUSSP	0.945	0.942	0.022	42.886	0.000
PEoU	0.626	0.611	0.103	6.063	0.000
PUSSP	0.835	0.810	0.093	9.004	0.000
SSPT	0.805	0.802	0.064	12.592	0.000

Table 3. Path coefficients

Paths	Regression weights	Sample mean (M)	Standard error (STERR)	T statistics (|O/STERR|)	P values
ATSSP-> ITUSSP	0.788	0.777	0.095	8.252	0.000
PEoU ->ATSSP	0.329	0.316	0.137	2.397	0.017
PEoU -> ITUSSP	0.308	0.304	0.163	1.883	0.060
PUSSP -> ATSSP	0.616	0.608	0.125	4.924	0.000
SSPT -> PUSSP	0.338	0.251	0.087	3.885	0.000
SSPT -> ITUSSP	0.440	0.429	0.141	3.119	0.002
SSPT -> PEoU	0.836	0.831	0.069	12.067	0.000
SSPT -> ATSSP	0.453	0.406	0.109	4.156	0.000
PUSSP -> ITUSSP	0.523	0.542	0.105	4.981	0.000

Table 4. Total effect

	ATSSP	ITUSSP	PEoU	PUSSP	SSPT
ATSSP	1.000				
ITUSSP	0.788	1.000			
PEoU	0.329	0.567	1.000		
PUSSP	0.616	0.584	0.456	1.000	
SSPT	0.461	0.355	0.836	0.379	1.000

Table 5. Goodness of fit of R-Square

	Cronbach's alpha	Composite reliability	AVE	R-Square
ATSSP	0.897	0.936	0.831	0.483
ITUSSP	0.945	0.960	0.859	0.844
PEoU	0.626	0.768	0.760	0.699
PUSSP	0.835	0.901	0.753	0.319
SSPT	0.805	0.884	0.717	

Table 6. Discriminant validity (fornell-larcker criterion)

	ATSSP	ITUSSP	PEoU	PUSSP	SSPT
ATSSP	**0.912**				
ITUSSP	0.877	**0.927**			
PEoU	0.322	0.593	**0.872**		
PUSSP	0.612	0.639	0.410	**0.868**	
SSPT	0.461	0.69	0.836	0.385	0.847

The results further revealed that there was proportional relationship between the perceive ease of use, perceive usefulness and attitude or assertiveness and the lecturers intension to use technology integration in the teaching and learning process. The result of the test also found the perceive ease of use and the perceive usefulness to influence positively the lecturers attitude towards the use of the statistical software packages SSP(s). If lecturers are trained, they will have change in their perception on perceived ease of use and perceived usefulness as well as attitude and their intension to use statistical software packages.

This suggest that training influences their perceive ease of use, perceive usefulness of adopting the new technology of teaching and learning statistics. Percieve ease of use and perceive usefulness will also influence their intension to adopt new technology.

7. CONCLUSION

After the carefully analyzing and discursion base on the problem statement, research objective as well as the hypothesis tested the study generally concluded that lecturers will use statistical software packages if they are given the needed training required in the use of statistical software packages. All hypothesis stated were found to be significant as shown in Fig. 2 and Table 3. The following specific conclusions were drawn based on the stated hypothesis.

1. The lecturers training in the used of statistical software packages has significant effect on perceived usefulness of statistical software packages (SSPs) implying that the more lecturers are trained in the use of statistical software packages the more useful statistical software packages are to them.
2. The lecturers training in the used of statistical software packages has significant effect on perceive ease of use of statistical software packages (SSPs) implying that the more lecturers are trained in the use of statistical software packages its becomes more easy statistical software packages are to them.
3. The lecturers training in the used of statistical software packages has significant effect on the lecturers intension to use statistical software packages (SSPs) implying that the more lecturers are trained in the use of statistical software packages the higher their intension to use statistical software packages.

4. The lecturers training in the used of statistical software packages has significant effect on the lecturers attitude towards statistical software packages (SSPs). Implying that the more lecturers are trained in the use of statistical software packages the better their attitude towards the use of statistical software packages.
5. The lecturers perceive ease of use of statistical software packages has significant effect on their intension to use statistical software packages (SSPs) implying that the more lecturers perceive the use of statistical software packages to be easy the more the lecturer intend to use statistical software packages are to them.
6. The lecturers perceive usefulness of statistical software packages has significant effect on their intension to use statistical software packages (SSPs) implying that the more useful the lecturer perceive the use of statistical software packages to be easy the better the lecturer intension to use statistical software packages in their lecture
7. The lecturers attitude towards the use of statistical software packages has significant effect on their intension to use statistical software packages (SSPs) implying as the lecturers develop positive attitude towards the use of statistical software packages to be the higher their intension to use statistical software packages are to them.
8. The lecturers perceive ease of use of statistical software packages has significant effect on their attitude towards use statistical software packages (SSPs) implying that the more lecturers perceive the use of statistical software packages to be easy the better their attitude towards use statistical software packages are to them.
9. The lecturers perceive usefulness of statistical software packages has significant effect on their attitude towards use statistical software packages (SSPs) implying that the more useful the lecturer perceive the use of statistical software packages to be easy better their attitude towards use statistical software packages are to them.

8. IMPLICATION ON LECTURE

The purpose of this paper is to demonstrate how training organized by university management for their statistics lecturers, demonstrators and teaching assistants can improve their intension to use the statistical software packages in their future lectures. This will help understand the relationships that exist among lecturers intension to use (ITUSSP), Perceive ease of use (PEoU), Attitude towards SSP(s), perceive usefulness (PUSSP) and training of lecturers by university management on the use of statistical software packages. Through this survey of the lecturers in statistics and mathematics and the subsequent structural equation modeling in SmartPLS,the important factors that lead to lecturers intension to use statistical software packages has been identified.

9. DIRECTION FOR FUTURE RESEARCH

Future studies can look out for both public and private universities in Ghana or possibly compare the effect of these identified factors on among private and public universities in Ghana.

This will grant us will full comprehension of the effect of software integration on teaching and learning of statistics among Ghanaian Tertiary institutions.

COMPETING INTERESTS

This is the declaration by the authors of this paper that, there is no competing interest among them.

REFERENCES

1. Binnie, N. Using Projects to Encourage Statistical Thinking. Proceedings of ICOTS-6; 2002.
2. Jacobbe T. Using preparing elementary school teachers to teach statistics: An International Dilemma. Proceedings of ICOTS-8, IASE; 2010.
3. Park SY. Analysis of technology acceptance model in understanding student behavioural intension to use e-learning. Educational Technology And Society. 2009;12(3):150-162.
4. Garfield J, Hogg B, Schau C, Whittinghill D. First courses in statistical science: the status of educational reform efforts.

Journal of Statistics Education. 2002; 10(2).
Available:http://www.amstat.org/publications/jse/v10n2/garfield.html

5. Neiss ML. Preparing teachers teach science and mathematics with technology: Develoing a technological content knowledge. Teaching and Teacher Education; 2005.
6. Lock HR. Www resources for teaching statistics (outline for the talk). Presented at: Technology in Statistics Education, a One day Conference for Teachers of Statistics. American Statistical Association; 1999.
7. Cobb G. "Teaching Statistics: More Data, Less Lecturing" in Teaching Statistics-Resources for Undergraduates, T. L. Moore (Ed), published jointly by Mathematical Association of America and American Statistical Association. 1991;1-5.
8. Cobb G. Teaching Statistics, in Heeding the Call for Change: Suggestions for Curricular Action, L. A. Steen(Ed), MAA Notes No. 22, Washington, D.C.: Mathematical Association of America. 1992;3-23.
9. Moore DS. New pedagogy and new content: the case of statistics. International Statistical Review. 1997;65:123-165.
10. Snee RD. Discussion: Development and Use of Statistical Thinking: A new Era. International Statistical Review. 1999; 67(3):255-258.
11. Wild CJ, Pfannkuch, M. Statistical thinking in empirical enquiry. International Statistical Review. 1999;67(3):223-265.
12. Nolan D, Speed TP. Teaching statistics theory through applications. The American Statistician. 1999;53:370-375.
13. Moore DS, Cobb GW, Garfield J, Meeker WQ. Statistics education fin de siecle. The American Statistician. 1995;49(3):259-260.
14. Kuiper SR. Incorporating a research experience into an early undergraduate statistics course. Proceedings of ICOTS-8, IASE. International Statistical Review. 2010;67(3):223-265.
15. Chin W. How to write up and report PLS analyses. In: EspositoVinzi V, Chin W.W, Henseler J, Wang H (eds) Handbook of partial least squares: concepts, methods and applications. Springer Heidelberg. 2010;655–690.
16. Jöreskog KG, Sörbom D. LISREL VI: Analysis of linear structural relationships by maximum likelihood and least squares methods. Scientific Software, Mooresville; 1986.
17. Fornell C. A second generation of multivariate analysis: an overview, in: C. Fornell (Ed.) A Second Generation of Multivariate Analysis. 1982;407–450. (New York: Praeger).
18. Ringle C, Sarstedt M, Straub D. A critical look at the use of pls-sem in mis quarterly. MISQ. 2012;36(1):3–14.
19. Bontis N. Intellectual capital: an exploratory study that develops measures and models. Management Decision. 1998; 36(2):63–76.
20. Baggozzi RP, Yi Y. Specification, evaluation and interpretation of structural equation models. Journal of the Academy of Marketing Science. Springer. 2012;40:8-34.
21. Fornell C, Bookstein FL. Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. Journal of Marketing. 1982;19:440–452.
22. Fornell C, Cha J. Partial least squares, in: R.P. Bagozzi (Ed.) Advanced Methods of Marketing Research (Blackwell Business); 1994.

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