

**FACILITATING COMPETENCIES OF IN-SERVICE
TRAINING FOR EFFECTIVE ACADEMNIC LEARNING
IN SPORT SCIENCE**

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Abstract

In-service training facilitates acquisition of skills and enhances teaching competencies, experiences and professional qualification of sports science lecturers. In the present study, competencies acquired from in-services training program were determined base on lecturers participation in planning, implementation and evaluation and lecturers competencies in planning instruction, conducting instruction, evaluating instruction that facilitate students growth were tested using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results show that the convergent validity for all the loadings was statistically significant. The goodness-of-fit statistics suggest that the proposed model represents an adequate fit to the observed data with the exception that χ^2/df which is slightly above 5.239. The critical ratios (t-values) were found to be significant and they were greater than (± 1.96) or (± 2.58) at 0.05 level or 0.01 level, respectively. Research findings shows that integration of in-service training program in sports science in Malaysia and Libya universities will enhance lectures professional competencies by sufficiently providing teaching skills and improved competency level needed to facilitate student's growth.

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Introduction

In-service training positively enhances lecturer's professional competency and increases their professional quality towards delivering quality teaching services. In-service training is central to the acquisition of professional competencies in view of the foregoing transitional changes in university education, in-services training plays essential role in meeting the development changes. The transitional changes in Libyan and Malaysian universities needs to be better understood in order to efficiently managed the fast growing innovations especially as sport has developed into a very successful profession, deriving large revenues across countries (Bjarnason & Brennan, 2003).

The advances in the use of sophisticated information technology facilities during in-service training program pose great challenges as a result of rapidly changing social and technological developments (Veronica et. al., 2006). However, professional competences in the developmental process of decisive issues arising from technological challenges and important shifts to upgrading teaching professional competencies platform and the quality of teachers to meet specific field requirement that necessitates improved competencies in respective academic discipline (White et al., 2010). Prevailing problems encountered by university teachers in the Arab countries has been attributed to lack appropriate in-service program to enhance teaching skills so as to keep with the changes in the curriculum contents resulting from scientific and technological progress in modern time (Mustafa, 2009) and has been found to be prevailing in Libya and Malaysia universities.

In Libya, study found that lectures receive no professional training before engaging in teaching profession (Arebi, 2010). Study found that collaboration with other learning communities through in-service training is needed at all levels of scientific development of competencies across various field of learning (Coffman, 2004). In Malaysia, in-service training and teachers developmental activities for academic staff are expensive (Wan & Mohammed, 2010; Desimone, 2009). However, there is need for lecturers in Malaysia universities to participate in professional development oriented in-service training programs so as to match with the adoption of technological infrastructures in teaching practices.

Educators are expected to be very knowledgeable in their profession so as to maintain high academic standards through the application of various teaching techniques needed for student's

academic progresses (White et al., 2010). Therefore the implementation of effective teaching practices requires that lecturers to acquire specific field competencies that facilitate academic learning through learning experiences that provides atmosphere of freedom, stimulates content, and implements flexible teaching procedures to prepare the student to cope with future changes and challenges.

However, it is widely accepted that knowledge acquired by lecturers during their pre-service education quickly becomes outmoded; this has prompted the need for the integration of in-service training programs into universities in Libya and Malaysia as a means to keep lecturers abreast of current developments in their profession that meets future academic developmental needs. Therefore in-service training activities bridge the gap between research and development in the teaching professional field and its practical applications (White et al., 2010).

To keep with the growing trend in education, it is deemed important for lecturing competencies to be improved via in-services training program (Schmitt et al., 2008). In-service training has been recognized as a potential improvement among sports scientist in education having long suffered in its developmental processes in coping with technological changes in educational requirement across different academic setting (White et al., 2010). In-service training serves as a tool in continuing academic program quality to meet educational needs of student by providing opportunity for lecturers to engage in self-examination and renewal as well as to provide a starting point for the initiation of program change through in-service training. In view of these foregoing observations, it becomes important that high priority be accorded to in-service training among various innovative educational practices especially in sports science.

Competencies in Sports Science

Competency as applies to the present study entails the knowledge and skills needed to meet academic demands (Karl et al., 2011) in sports science education among universities in Libya and Malaysia. In most cases academic demands combines with specific professional requirements (Kaslow, 2004) and plays motivational role in equipping student with the required learning outcome which are vital for successful demonstration of sports science implementation strategies (Karl et al., 2011). The competencies in sports science discussed in this study

comprises those associated with planning instruction, conducting instruction, and evaluation of instruction that facilitating student growth.

Competencies in Planning Instruction

Competencies in planning instruction denotes knowledge and skills acquisition that are necessary to effectively conduct all learning practices based on a prescribed learning standard of a particular academic setting. However, the programs offered in various academic setting base on which competencies are developed is a traditional indicator of different field of specialization and are related to competencies in planning instruction which are often used to evaluate teaching competencies (Wagner & Maree, 2007; Hager, 2011). The academic setting for the development of competency can be divided into manageable teaching load that show dependency on programs and courses offered. Appropriate planning of teaching instruction of multidimensionality facilitates knowledge and skills acquisition and student's growth (Walker, 2008). Therefore competencies in planning instruction comprise skills needed for teachers to meet their student's academic requirement and include preparation on instructional materials such as selection and arranging how major decisions such as choosing instructional strategies and arranging the instructional environment are made.

Competencies in Conducting Instruction

Considerable body of research has showed concerned on the competencies needed in conducting instruction in sports science among university lecturers (Kagaari, 2007). This concern aroused owing to lack of appropriate instructional programs for preparing educational instructors. Need for competencies in conducting instruction have been reviewed and validated (Spector et al., 2006) base on their level of importance in evaluating student's academic performance. Competencies in conducting instruction provide learning experiences that motivates learning processes and the demonstration of acquired skills through instructive problem-solving skill that provides relational learning experiences.

Competence in Evaluating Instruction

The ability of sports science lectures to evaluate students learning performance contributes to the effectiveness of their assessment experiences (Vicente-Arturo et al., 2012). Sports science evaluation ability encompasses monitoring entire learning processes and acting based on the observed events that improves sports science student's growth. However, comprehensive monitoring requires continuous observation and recording of events and poses serious challenges and involves additional costs. In in-service training program, learning process requires effective interaction between the instructors, students and course resources are important in evaluation of student's growth. Technologically-base infrastructural aided monitoring in educational sectors has shown to provide possibilities of learning evaluation resources that the integrated information technology mediated learning process (Johnson et al., 2011). This made it possible for evaluator to share learning space under information flow system that is virtually controlled by technological infrastructure. Competencies in evaluating instruction base on information technology provide interaction between learning processes and comprehensive monitoring strategy. Therefore effective in-service training program should be integrated with information technology mediated infrastructure that facilitates online learning through fast and convenient interactive learning process and are useful in determining learning abilities before, during, and after instruction.

Teaching Competencies

Specific knowledge and ability required in different academic field to deliver lectures in various level of teaching is referred to as teaching competency. It encompasses compliance with a specific acceptable standard required for a particular duty or occupation that addresses teaching ability and efficiency and extends to set of social behaviours that allows for proper delivering of the role or function or activity in a specific community or environment (So & Bonk, 2010). Teachers are often responsible for planning and implementation of sport science programs covering all aspects of activity that are taught in-service training. In situations where certification is provided, lecturers plan the activities that should appropriately certify the program. The purpose of in-service training is to improve teacher's competence skills in providing, conducting

and facilitating learning experiences. Therefore teaching competence extends to adequacy for a task requiring knowledge, skill, and abilities (Lee, 2010).

In view of Malaysian universities, it has been reported that lecturers should possess good command of English to enable them interact with foreign students (Wan & Mohammed, 2010) as more than 50% of the lecturers in Malaysia that sat for English examination were found to be incompetent in using English as a mode of instruction in 2006 (JPPKK, 2007). Considering the necessity to identify knowledge and performance discrepancies base on lecturer's incompetence in conduction instruction, study added (Mohammed, 2007) that attention should be focused on in-service training program as capable of enhancing competencies of teaching instructors. Previous studies found that lecturer's competency level determines their professional development in conducting instruction (Mohamad, 2006; Mohammed, 2007). Effective professional development training programs is needed to facilitate learning (Merriam et al., 2007; Burns, 2008). However, it have been found that teachers perceived that their professionalism in respective fields of teaching can be enhanced through planned in-service training program that focuses on academic needs which are essential in improving their instructional competencies (Kennedy et al., 2008; Rehm, 2008) and has been considered as a more structured learning approach. Consequently, there is limited research on teaching competencies in Malaysian and Libya. However, competencies associated with participation, implementation and evaluation of teaching professional skills with the aim to enhance student's academic performance are discussed in this study.

Teacher's participation in in-service training programs provides them with the opportunities to learn while still undertaking their normal teaching job. Participation as refers to teaching competencies entails taking part in different spheres of in-service training in an attempt to acquire knowledge on the effectiveness of teaching role in educational training program. This term is used to explain teacher's involvement in in-service training leading to effective and efficient enhancement of academic practices in sports science (Kremer & Glewwe, 2005). In-services training have been referred to as the best catalyst for professional development base on needs-oriented, well-conceived, and organized instructional improvement program (Kagaari & Munene, 2007) that needs personal involvement, consensus, and commitment for effective

implementation of teaching practices (p.2), teachers participation in in-service training program and have been considered to be;

- Interactional, structured and should be guided by competent and experienced colleagues
- Teachers should be exposed to learning opportunities that determines their competence level
- Learning opportunities should be based teachers developmental needs
- There is need for close collaboration to facilitate knowledge transfer and cooperation among teachers in various universities in Libya and Malaysia.

Implementation of in-services training refers to the process of organizing teaching practice, program, or set of activities (Fullan, 2007). It extends to initiation of sports science programs that facilitate learning of skills to improve competence and academic qualification which are often evaluated base on its outcome. Implementation of skills include presenting facts, concepts, principles, problem solving strategies and are considered to be part of classroom recitation process such as listening, explaining, questioning, giving examples and introducing new sports skills.

Evaluation as used in sports science entails the ability of teachers to assess value of materials and methods in in-services training to appraise critique or interpret meanings (Hair et al., 2006) and is also useful in assessing student performance in rating their general learning outcome.

Competencies in In-service Training Program

Technological innovation in teaching practices has been characteristic by developmental training progresses in in-service programs of teacher's (van Velzen et al., 2012). Teacher's education in partnership with in-service programs indicated that school-based teachers enhance education qualification of teachers through learning process while at school services (van Velzen et al., 2012). Educational in-service training programs aim at meeting student academic need in the workplace together with formal educational activities and competence (Maaranen et al., 2008). Establishment of the contribution and effectiveness of in-service training program competencies through work-based learning in educational sectors in Malaysia and Libya could positively foster improved teaching competencies in various fields of learning among Libyan and Malaysia universities.

In-Service Training in Teaching

In-services training programs in teaching equips sports science lecturers with skills that enables them to develop their professional skills that strengthens innovation initiatives (Tian, 2010). Basic sports science skill acquired through in-service training programs perfectly guide teaching of sports science in schools. However, in-service training in teaching are constrained by the changing nature of teaching activities which requires professionally qualified and proactive skills to enable them respond adequately to the uncertainties and increasing complexities that characterizes sports science educational settings. The professional skills can be acquired through in-service experiences that facilitate student growth and general view of education (Flores, 2005). However, these innovative changes necessitate competencies in teaching skills to deliver quality education (Wan & Mohammed, 2010) and to foster willingness to participate in professional developmental through in-service training programs as a way to promote effective and efficient teaching practices. However, conceptualization of teacher's in-service training has been referred to as a professional developmental process that starts from institutional level (Struyven & De Meyst, 2010). The developmental processes in teaching competences are positive steps in educational training with focus on transforming students into competent learners (Rehm, 2008). The demystification of teacher's educational in-service training process leads to greater confidence that improves students learning outcome.

Methodology

Representativeness of the Sample

Samples used in the present study comprise of lecturers of different age groups from the Faculty of Sport Science and Management in universities in Libya and Malaysia. SEM was used to statistically analyse dataset and to test the hypotheses. Although SEM is relatively new technique, its adoption as a research tool has gained wider acceptance especially in testing the relationships in theoretical model (Chang & King, 2005; Hair et al., 2006). The samples that were used represent spectrum of their age ranges and gender. Various steps were taken in order to optimize

the representativeness of the quota sample. The proposed and achieved compositions of the lecturers by age and gender are as shown in Table 1 and Table 2 while their differences are represented in Table 3.

Table 1: Proposed Sample Compositions by Gender and Age

No	Age	Gender				Ratio		Total Number of Respondents	
		Male		Female		Male	Female	Freq	%
		Freq	%	Freq	%	%	%		
1	Less than 20 years	12	4.4	6	4.4	60.0	40.0	18	4.4
2	20 – 29 years	24	8.8	12	8.8	60.0	40.0	36	26.2
3	30 – 39 years	50	18.5	25	18.5	60.0	40.0	75	34.8
4	40 – 49 years	100	37.0	50	37.0	60.0	40.0	150	26.2
5	50 – 59 years	70	26.1	35	26.1	60.0	40.0	105	4.3
6	60 and above	14	5.3	7	5.3	60.0	40.0	21	2.2
	Total	270	100.0	135	100.0	60.0	40.0	405	100.0

N = 320

Table 2: Actual Sample Composition by Age and Gender

No	Age	Gender				Ratio		Total Number of Respondents	
		Male		Female		Male	Female	Freq	%
		Freq	%	Freq	%	%	%		
1	Less than 20 years	12	3.9	8	3.8	60.0	40.0	20	4.8
2	20 – 29 years	22	8.7	15	8.4	59.4	41.6	37	8.9
3	30 – 39 years	50	20.1	33	18.3	56.8	43.2	83	20.1
4	40 – 49 years	86	33.0	57	38.9	60.1	39.9	143	34.6
5	50 – 59 years	63	25.2	42	25.2	60.0	40.0	105	25.4
6	60 and above	15	8.5	10	5.4	60.0	40.0	25	6.2
	Total	248	100.0	165	100.0	60.0	40.0	413	100.0

N = 320

Table 3: Differences between Proposed and Actual Number of Respondents

No	Age	Male		Female	
		Quota	Actual	Quota	Actual
1	Less than 20 years	12	12	6	8
2	20 – 29 years	24	22	12	15
3	30 – 39 years	50	50	25	33

4	40 – 49 years	100	86	50	57
5	50 – 59 years	70	63	35	42
6	60 and above	14	15	7	10
		270	248 (-22)	135	165 (+30)

N= 413

Data Collection

Drop-off and Collect Questionnaire

Drop-off and collect questionnaire administration method were adopted for data collection. This method of questionnaire administration requires that the researchers delivers the survey questionnaire and collects it at a later day. This data collection method provided opportunity for interaction between the researcher and the respondents and enables the researcher to clarifies respondents on the need for the research and the importance of completing the survey instrument base on their knowledge about the research instrument (Parasuraman, 1991). Demographic profile of the respondents is as shown in Table 4 while the statistical evaluation of the construct used is represented in Table 5.

Table 4: Demographic Profile of the Respondents

No	Particulars	Malaysia		Libya	
1	Age	2.440		2.556	
	1) Below 30 years	31	19.4	26	16.3
	2) 30 Less than 40	57	35.6	51	48.1
	3) 40 Less than 50	42	26.3	51	80.0
	4) 50 Years and above	30	18.8	32	20.0
2	Gender	1.410		1.238	
	1) Male	94	58.8	122	76.3
	2) Female	66	41.3	38	23.8
3	Academic Qualification	1.880		1.431	
	1) PhD	40	25.0	94	58.8
	2) Masters	102	63.8	63	39.4
	3) Degree	16	10.0	3	1.9
	4) Others (please state)	2	1.3	-	-
4	Working experience	2.610		2.537	

1) Less than 5 years	39	24.4	52	32.5
2) 5 Less than 10 years	34	21.3	37	23.1
3) 10 Less than 15 years	53	33.1	34	21.3
4) 15 Less than 20 years	19	11.9	7	4.4
5) 20 and above	15	9.4	30	18.8

Table 5: Summary of Statistics for All Constructs

No		Mean	SD	Item	α	Skewne-ss	Kurto-sis
A Participation							
1	Planning	5.270	.995	6	0.821	-.267	-.012
2	Implementation	5.411	.944	5	0.859	-.290	-.114
3	Evaluation	5.112	.888	5	0.859	-.198	-.045
B Competencies							
1	Planning instruction						
2	Conducting instruction	5.580	1.007	7	0.918	-.489	.106
3	Evaluating instruction	5.616	.988	6	0.877	-.791	1.123
4	Facilitating student growth	5.181	.917	5	0.840	-.111	-.253

Evaluation of the Measurement Model

Exploratory factor analysis otherwise refer to EFA entails a process were used to identify the pattern of correlations of different variables instead of reducing larger number of variables to a smaller set of underlying factors which summarise the information about the variables (Tabachnick & Fidell, 2001). Often, it is used as exploratory technique to summarize structures of sets of variables (Coakes et al., 2008) for constructing reliable test. Measurement model often referred to as latent constructs were used to measure observed variables and are evaluated base on convergent and discriminant validity. The Cronbach's alpha and composite reliability average variance were extracted as R^2 correlation for each congeneric measure. Combination of congeneric measurement from the loaded factors to EFA produces outputs which are denoted as pim1, pim2, pim3 and pim4 referred to as the congeneric measure for participation in implementation (pim).

The measures for the goodness-of-fit and convergent validity were evaluated and tabulated for each of the congeneric measures in Table 10. However, the discriminant validity

evaluation demonstrate that each of the factors or latent variables of the structural model AVE, composite reliability, Cronbach's alpha and R^2 correlations between factors above the threshold values. Discriminant validity is deemed to have been achieved if and only if the value of AVE is greater than the R^2 correlations between factors, suggesting that each factor has free variance (AVE) than variance shared with the other factors. The value of AVE should exceed 0.50 (Byrne, 2001).

Result and Discussion

The following section will present some discussion on the assessment of model fit using the various fit indices. Description of the study demographics are shown in Table 1, 2, 3, and 4. Table 1 presents sample composition by age and gender while presented actual sample composition. The difference from sample composition and the actual sample composition is as shown in Table 3. Demographic profile of the respondents are represented base on age, gender, academic qualification and work experiences and are as shown in Table 4. Figure 4 shows the demographic profile of the respondents drawn from AMOS software. The latent factor or the congeneric measure ρ_{im} was drawn with the four indicator variables and their associated error terms. The indicator variables provided information on how many factors that best represent the data and all measured variables and how they are related to every factor loading estimate. CFA were used to specify the number of factors that exists with a set of variables and which each variable will load highly on before results can be computed on each congeneric measure to determine its overall fit and convergent validity (Byrne, 2001) and determine its discriminant validity and reliability. Table 5 presents statistical summary of all construct and comprises participation (planning, implementation and evaluation) and competencies (planning instruction, conducting instruction, evaluating instruction and facilitating student growth) through in-service training programs among sports science lecturers in Malaysia and Libyan universities base on which lecturers competencies were measured.

Descriptive statistics of competencies in planning instruction is as shown in Table 6. Competencies of lecturers conducting instruction (Table 7), competencies in evaluating instruction (Table 8) and competencies in facilitating student growth (Table 9) and were

measured using mean and standard deviation. Result shows that the statistical measurement slightly differs among the tested items.

Table 6: Descriptive Statistics for Competency in Planning Instruction

No	Items	Mean	S	N
			D	
	Develop instructional objectives.	2.64	.979	320
	Teach new knowledge.	2.71	.951	320
	Develop new learning materials.	2.57	.897	320
	Design instructional media.	2.46	.919	320

Table 7: Descriptive Statistics for Competency in Conducting Instruction

No	Items	Mean	SD	N
	Teach classroom management.	2.47	.881	320
	How to individualize instruction.	2.50	.842	320
	Use audiovisual aids..	2.55	.965	320
	Motivate students.	2.58	.966	320
	Implement problem-solving technique..	2.60	.880	320
	Promote positive self-concept.	2.58	.856	320
	Communicate with students.	2.56	.890	320

Table 8: Descriptive statistics for competency in evaluating instruction

No	Items	Mean	SD	N
	Assess student programmes.	2.54	.975	320
	Diagnose learning difficulty.	2.57	.889	320
	Involve students in assessment.	2.49	.860	320
	Use statistics in assessment.	2.51	.882	320

Table 9: Descriptive Statistics for Competency in Facilitating Student Growth

No	Items	Mean	SD	N
cfs1	Teach how to counsel students.	2.59	.881	320

cfs2	Promote positive self-concept.	2.61	.910	320
cfs3	Deal with students with problems.	2.51	.927	320
cfs4	Listen to students effectively.	2.52	.819	320
cfs5	Question and answers.	2.45	.905	320

Table 10: Summary of Results obtained from the Measurement Model

No	Congeneric Measures	Standardised Regression (Loading)	Critical Ratio	Composite Reliability	R ²	AVE	α
1	Competency in Planning Instruction			0.927		0.681	0.932
cpi1	Instructional objectives.	0.725	14.607		0.650		
cpi2	New knowledge.	0.765	15.774		0.719		
cpi3	Learning materials.	0.857	-----		0.587		
cpi4	Instructional media.	0.833	17.828		0.734		
2	Competency in Conducting Instruction			0.868		0.623	0.867
cci3	Use audiovisual aid.	0.815			0.610		
cci4	Motivate students.	0.846			0.525		
cci6	Positive self-concept.	0.776					
cci7	Effective communication.	0.838					
3	Competency in Evaluating Instruction			0.866		0.619	0.866
cei1	Assess programmes.	0.789	18.131		0.683		
cei2	Diagnose learning difficulty.	0.758	-----		0.645		
cei3	Assessment of progress.	0.875	16.817		0.467		

cei4	Statistics for assessment.	0.759	15.641	0.534
4	Competency in Facilitating Student Growth			
cfs1	How to counsel student.	0.805	16.657	
cfs2	Positive self-concepts	0.829	17.399	
cfs3	Deal with problems	0.797	16.430	
cfs4	How to listen effectively.	0.825	-----	
cfs5	Question and answer.	0.784	16.055	

Results from the Measurement Model Summary for all the construct are as shown in Table 11. Results show that the convergent validity for all the loadings was statistically significant. Moreover, all the goodness-of-fit statistics suggest that the proposed model represents an adequate fit to the observed data with the exception that χ^2/df which is slightly above 5.239. The values for GFI, IFI and CFI are close to 0.9 and the value for GFI is close to 0.8 indicating that the fit of the data to the proposed model was marginal. The critical ratios (t-values) were found to be significant and they were greater than (± 1.96) or (± 2.58) at 0.05 level or 0.01 level, respectively. The calculation of both composite reliability and AVE is based on the standardised coefficient value for all the items for each congeneric measure. In addition, the Cronbach's α s were computed. From Table 10, it is evident that the R^2 value for all items achieved a satisfactory level of more than 0.50 which is above the threshold level of convergent validity (Steenkamp & van Trijip, 1991). The values of composite reliability, for all constructs were greater than 0.700 which is above the threshold value of 0.600 as recommended by Agustin & Jagdip (1988).

The findings from the present study provided host of potential implications for sports science lecturers that participate in planning, implementation and evaluation of in-service activities in sports science in the respective universities in Malaysia and Libya. From the research findings, all universities emphasises on the imperatives of in-services trainings and educational development for the academic staff so as to be sufficiently knowledgeable on the competency level needed to facilitate student's growth. Therefore the present study play important role in modifying learning processes in the respective universities and in planning, implementation and

evaluation of in-service training activities. It becomes empirical that the compelling findings especially with regards to enhancing professional skills of sports science lecturers in Libya and Malaysia complemented student academic growth. Moreover, this present study positively contributes to educational sectors especially in sports science programs. This is the first piece of empirical research to study the interplays between variables that include the underlying dimensions of in-service training program between Malaysia and Libyan universities.

Conclusion

Participation and competencies of sports science lecturer's in Malaysia and Libyan universities participation in in-service training program has been investigated. Result shows that in-service training program provides an ideal setting for the enhancement of lecturer's professional competencies in various academic fields especially in sports science. The result reported was limited to lecturer's participation and competencies in in-service training. EFA is considered was used to measure the dimensions of the items that were used while the confirmatory factor analysis (CFA) was referred to as measurement modelling. In the model, items less than 0.7 were excluded from the analyses. The measurement model was specifically based on the results of the exploratory factor analysis. The summary of the confirmatory factor analysis (CFA) for the individual congeneric measures constitute Measurement Model are tabulated in Table 10. The CFA results for each measure are presented to show the fit indices, standardised loading and its critical ratio. The CFA results are an extract of the text output to establish that regression weights of the congeneric measures were marginal and not part of measurement model. The three congeneric measures which were evaluated include participation in planning A, participation in planning B, participation in implementation and participation in evaluation.

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