

Modelling Factors Encouraging Knowledge Sharing Culture as a Socio-Innovation in Collaborative Era

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Abstract: This study aims to confirm how fit measured indicators of a designed instrument describing knowledge sharing behaviour among faculty members of Higher Education Institution (HEI) to stimulate higher collaboration works supporting Independent Learning, Freedom Campus (*Merdeka Belajar Kampus Merdeka-MBK*M) program in Indonesia. Some independent variables were proposed in this study, including personal forces (autonomy, normative beliefs on knowledge sharing, leadership, and attitude toward knowledge sharing); as well as institutional forces (expected rewards and associations, expected contribution, structure, technology platform, affiliation to institution, and affiliation to discipline). As many as 264 Indonesian faculty members participated in this study using anonymous google form. Using Confirmatory Factor Analysis (CFA), this study established the reliable constructs for both personal and institutional forces. There were two phases for defining the best items for the instrument, hence the modified items excluded 12 items from the original ones to form a more fit model at the modification stage. The policy makers can use this model to identify the knowledge sharing intention among faculty members in order to design appropriate interventions.

Keywords: CFA, HEI, Knowledge sharing, Personal forces, Institutional forces

1. Introduction

Independent Learning, Freedom Campus (*Merdeka Belajar Kampus Merdeka-MBK*M) program is a new approach to the education system in Indonesia initiated by Nadiem Makarim, the Minister of Education and Culture (2019-2024). This system allows students of HEI to take courses in other universities or convert internship activities as substitutes for formal classes in order to provide them more space to explore knowledge according to their passion (Tinggi, 2020). This program also permits faculty members to teach across university or participate in an internship program in other institutions to increase practical experiences. In this situation, knowledge management among HEI faculty members is important (Ridzuan & Hong, 2008). Chabibie (2020) proposed the steps needed to support this program, namely: (1) building a technology-based education ecosystem, (2) collaborating with cross-stakeholders; (3) validating data; as it is important to use data and technological innovations

for policy reference and for learning patterns. Meanwhile, Sihombing, et al (2021) suggested conducting more training and staff mobilisation to support this program.

Hockings, Thomas, Ottaway and Jones (2017) found that students initially use only organising and reinforcing skills at low levels. However, in the next stage they can apply higher extending and applying skills. Independent learning programs require clearer guidance, clearer assignments, and internal student support to promote independent learning. Yet the strongest influence on their independent learning is the support, collaboration and advice from other (more experienced) students outside the program. These findings have implications for staff to be involved in induction, student support, curriculum design as well as for staff and officers in the Student Union.

Collaboration is a central issue for the Independent Learning, Freedom Campus program in Indonesia. Both internal and external parties' collaboration are needed to prepare students and faculty members for mobility as mandated by this program. In internal collaboration, interactions among individuals involved result in the dissemination of knowledge that makes each individual equipped with new knowledge (Djamaludin, 2020). In realising effective collaboration and achieving the vision or goal, it is necessary to have the ability to share information and knowledge. However, the inter-organizational trust must first be built to lead to better inter-organizational collaboration and knowledge sharing (Chen, Lin & Yen, 2014). Furthermore, Chedid, Cladeira, Alvelos and Teixeira (2019) found that the behavioural intention to share knowledge has a positive influence in collaborative work. This study also revealed that trust is a variable that more strongly influences the intention to share knowledge than intrinsic motivation and networking.

In reality, the Independent Learning, Freedom Campus program in Indonesia is progressing slowly due to this trust issue. Pessimism and lack of trust to the program effectiveness appear as the response of this breakthrough idea. Apart from referring to basic regulations, many universities try to build their own system version to transform this policy into more detailed actions (Hermanto, Kusnanto & Fadilah, 2021; Baharuddin, 2021; Dzikria & Narulita, 2021; Krisnanik, Saphira & Indriana, 2021; Umazah & Sakre, 2020). Despite detailed differences among the models, all of them include knowledge sharing intention as the key of having collaboration. Accordingly, a proper model is needed through which policy makers can examine and intervene how individuals and HEI progress in Independent Learning, Freedom Campus program. In this study, we develop and test a new model of knowledge sharing intention designed to empirically examine the influence of knowledge sharing intention among faculty members of HEI in Indonesia.

2. Literature Review

2.1. Theory of Planned Behaviour

The main factor in the theory of planned behaviour is the behavioural intention or intention of someone to take any action or behaviour (Ajzen, 1991). Based on this theory, three things affect a person's intention in conducting a behaviour, namely: (a) Attitude towards the behaviour. Attitudes are born from the motivation that makes a person perform a certain behaviour. Attitude is considered as a belief that a person has, both positive and negative, towards a behaviour. If the attitude is positive, an individual will carry out a behaviour; on the contrary, if the attitude is negative, then an individual tends to avoid this attitude. (b) Subjective norm, defined as social pressure that encourages someone to do or not do a behaviour. An individual tends to carry out behaviour when he sees the people closest to him doing the same thing. (c) Perceived behavioural control, namely the level of an individual's control over a behaviour. An individual tends not to do something if the action is beyond his control, this will affect whether he will show the behaviour or not. As a general rule, the more favourable attitudes and subjective norms to behaviour, and the greater the perceived behavioural control, the stronger must be the individual's intention to perform the considered behaviour (Bosnjak, Ajzen & Schmidt, 2020). The importance of perceived attitudes, subjective norms, and behavioural control in expected intentions vary across behaviours and situations.

2.2. Social Exchange Theory (SET)

Blau (1968) suggested that Social Exchange Theory (SET) implies that an individual has a desire to interact with other individuals after analysing the cost benefits of the interaction (Cook, 2013). This theory assumes that the activities carried out by the organisation and its employees produce organisational commitment (Aldhuwaihi, 2013). Based on this assumption, employees expect to join a better organisational environment and work culture, so that they can provide benefits in the form of skills and knowledge to achieve their personal goals. Therefore, favourable exchange relationships between employees and organisations are in an increasing organisational commitment.

SET deals with three principles, namely (i) rationality (ii) reciprocity and (iii) specificity principle to explain the relationship between employee and employer (Foa & Foa, 2012). Based on SET's principles, knowledge sharing intention among HEI faculty members will only happen if they believe doing knowledge sharing will be beneficial for their personal goals. On the other hand, orientation and organisational culture play an important role in implementing organisational strategy and influencing organisational commitment, ultimately improving organisational performance (Ahmed, Khuwaja, Brohi, Othman & Bin, 2018). Consequently, to boost knowledge sharing practices in order to accelerate Independent Learning, Freedom Campus program, HEI managers have to be intervening factors creating knowledge sharing culture among faculty members and cultivate beliefs that knowledge sharing activities could be beneficial for both organisation and personal performance improvement.

2.3. Institutional Forces of Knowledge Sharing Intention

A fair reward and recognition programs for employees would achieve big progress to organisations by absolutely complying these programs with their business strategy (Danish & Usman, 2010). This could be applied too for knowledge sharing policies to stimulate faculty members' intention in sharing knowledge. Mohammad, Alajmi and Ahmed (2018) divided rewards into intrinsic rewards and extrinsic rewards. Furthermore, Nguyen and Malik (2020) stated that extrinsic rewards encourage employees in private companies to share knowledge online, whereas intrinsic rewards work effectively in public companies. Therefore, expected rewards and associations (X1.1) are listed as the first indicator of institutional forces of knowledge sharing intention

Expected contribution (X1.2) refers to employees' belief that sharing their knowledge will improve organisational performance (Bock et al., 2005) and they will gain confidence in their ability to provide knowledge that is valued by the company (Fullwood & Rowley, 2017). Meanwhile, organisational structure (X1.3) becomes the third indicator as the integration of knowledge into management decisions and practices depends on the extent to which organisational culture supports or hinders the knowledge process (Intezari, Taskin & Pauleen, 2017). Therefore, organisational structure is expected to have influence on knowledge sharing intention among organisation members.

The next indicators are affiliation to institution (X1.4) and discipline (X1.6). Yang, Nguyen and Le (2018) emphasised the need to build a collaborative culture to create a knowledge-sharing culture to encourage innovation capabilities within the institution. Meanwhile, Cronin (2000) found that faculty members' first loyalty was to their discipline. Consequently, affiliation to institution and discipline can also be considered to be central to academic culture. The last indicator is technology platform (X1.5). Relationship-based knowledge sharing at the personal level often reflects relationship-based transactions at the organisation level. In this relationship-based context, the technology platform is the most important tool supporting informal and interactive knowledge sharing processes (Davison, Ou & Martinsons, 2012). Choi, Lee and Yoo (2010) found that IT support has a positive impact on knowledge sharing and knowledge application.

2.4. External Forces of Knowledge Sharing Intention

Autonomy (X2.1) is the first indicator for external forces of knowledge sharing intention. Lam and Lambermont-Ford (2010) stated that extrinsic incentives may "crowd out" intrinsic motivation for knowledge sharing because of perceived diminished autonomy and responsibility within professional groups. Furthermore, Reinholt, Pedersen and Foss (2011) found that employees' knowledge acquisition and provision are highest when network centrality, autonomous motivation, and ability are all high.

Normative beliefs on knowledge sharing (X2.2) are individual beliefs about the extent to which other people who are considered important to them think that they should or should not perform certain behaviours (Cialdini et al., 1990). In this case, it means that the feelings of the faculty members towards their leaders and colleagues to do the same thing as what they do, in this case, is knowledge sharing.

The next indicator is leadership (X2.3). The study conducted by Lee, Gillespie, Mann and Wearing (2010) found that by building team expertise, the leader increases the willingness of team members to rely on and disclose information within the team, which in turn increases the team's knowledge sharing. Knowledge sharing mediates transformational leadership effects on innovation capabilities (Le & Lei, 2019). Lastly, attitude toward knowledge (X2.4) is the fourth indicator. Attitudes are determined by some important beliefs that are organised hierarchically (Bentler & Speckart, 1979). These beliefs influence a person's goals, attitudes, and behaviour. Individuals who share common values and shared vision tend to share knowledge (Alavi et al., 2006).

3. Research Method

This study took a quantitative approach involving 264 faculty members of Universitas Negeri Semarang (UNNES) Indonesia. The data were collected using an online questionnaire using 53 questions to measure institution and personal forces. The response data were tabulated, coded and reduced according to the research question then analysed descriptively. The response score was calculated to get Sharing Index (SI) according to the formula $SI = \text{average score per indicator} / \text{maximum score}$. Then the SI score was categorized into three different categories, including low, moderate and high to express the respondent's intention of sharing knowledge.

Table 1: Achievement Score and Category of the Indicators

SI score	Category
≥ 5.00	Strong
4.00 – 5.00	Moderate
≤ 3.00	Low

SEM analysis was run using LISREL v 8.0 using a two-step approach (Farooq, 2016; Vieira, 2011). The research model that has met the specification and identification process was then tested for model fit using the Maximum Likelihood (ML) method, by correcting standard errors and several goodness of fit indices (GOF). The model estimation was carried out starting with making the SIMPLIS program for the construct measurement model (2nd confirmatory factor analysis model [2nd CFA] and full model). The results of the analysis were continued by testing the suitability of the overall model which is reflected by the GOF. In this study, the GOF criteria were divided into three reviews: absolute fit, incremental fit, and parsimony fit.

Evaluation was carried out on each construct or measurement model separately through validity and reliability tests of the measurement model. The calculation of variables has good validity to the construct of the standardised loading factor [λ] 0.5. Meanwhile, the reliability test in this study was analysed using Cronbach's alpha because it has the fewest assumptions limits. The relationship in this model was estimated through a confirmatory factor analysis (CFA) model where there has been an unmeasured covariance between each pair of possible variables and evaluated using the alignment test measurement.

4. Results and Discussion

The questionnaire score was used as the value of calculating indicators' score and grouping into the criteria. The average value of the indicators ranges from 4.00 – 6.00 which indicate moderate to high criteria.

Table 2. Variables Score based on Questionnaire

Aspect	Score	Criteria	p value
Intention to Share Knowledge (Y)	3.25	Low	0.000
Institutional Force			
Expected Rewards and Associations (X1.1)	4.56	Moderate	0.000
Expected Contribution (X1.2)	4.40	Moderate	0.000
Structure (X1.3)	5.61	High	0.621
Affiliation to Institution (X1.4)	4.57	Moderate	0.000
Technology Platform (X1.5)	4.71	Moderate	0.000
Affiliation to Discipline (X1.6)	4.09	Moderate	0.000
Average Score	4.66	Moderate	0.000
Personal Force			
Autonomy (X2.1)	3.97	Moderate	0.000
Normative Beliefs on Knowledge Sharing (X2.2)	4.69	Moderate	0.000
Leadership (X2.3)	4.16	Moderate	0.000
Attitude toward Knowledge (X2.4)	5.18	Moderate	0.000
Average Score	4.50	Moderate	0.000

The results of the analysis on the Hybrid Model (2nd order CFA) are displayed on the standardized measurement model output (Figure 1), the estimation output of the structural model (Figure 2) and the GOF output. The standardized output of the measurement model will be used to test the validity and reliability of the measurement variables. In this case, the measurement model is in the form of sub-indicators and indicators of the variables X1, X2, and Y. The estimation output is used for structural testing, while the GOF output is used to test the overall fit of the model. The model was then evaluated using the alignment test measurement which produced a valid and reliable measurement and structural model. The model produced convergent validity with the results shown in Table 3. There were 41 variable constructs observed having a standardized loading factor value (λ) > 0.5. Besides, 12 constructs were invalid, consequently they must be excluded to form a more fit model at the modification stage. Furthermore, the value of each latent variable construct X1.2; X1.3; X1.4; X2.1; X2.2; and X2.4 has a Construct Reliability (CR) value of 0.70 and a variance extracted (VE) value of 0.50. Therefore, it can be concluded that each indicator is reliable in shaping or reflecting these variables, while the variables Y; X1.1; X1.5; X1.6; and X2.3 have each a value of VE < 0.5, so that the indicator is less reliable in forming the construct of the Y variable; X1.1; X1.5; X1.6; and X2.3. Invalid variables were excluded in the model modification stage.

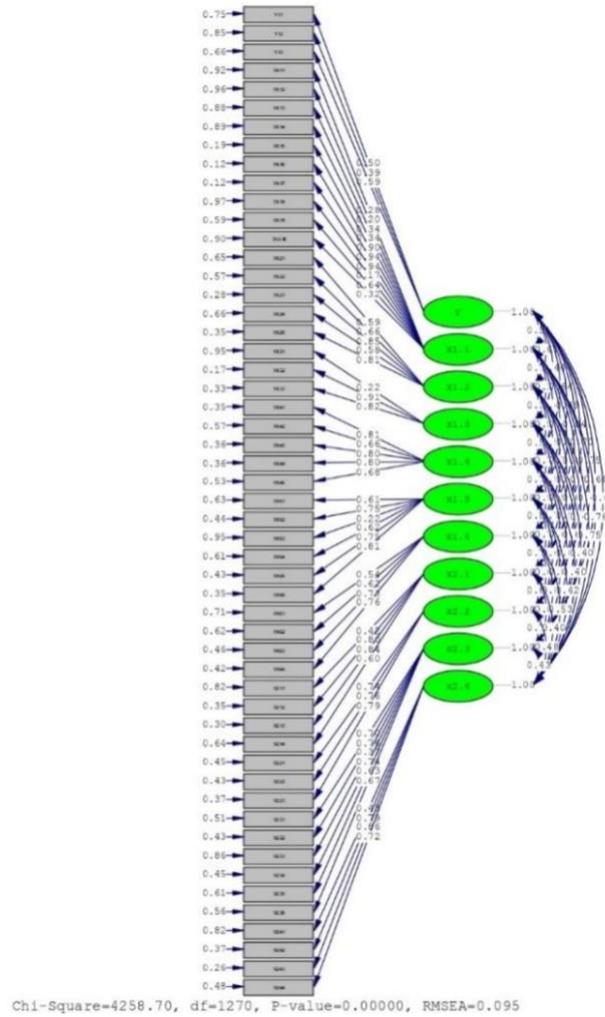


Fig. 1: Standardized Model Output

Table 3. Validity and Reliability Test Results for Measured Model

Latent Variable	Construct	Std Loading \geq 0,5	Error Var	Reliability		Validity Status	Reliability Status
				CR \geq 0,7	VE \geq 0,5		
Y	Y1.1	0.5	0.75	0.49	0.25	valid	unreliable
	Y1.2	0.39	0.85			invalid	
	Y1.3	0.59	0.66			valid	
X1.1	X1.1.1	0.28	0.92	0.80	0.35	invalid	unreliable
	X1.1.2	0.2	0.96			invalid	
	X1.1.3	0.34	0.88			invalid	
	X1.1.4	0.34	0.89			invalid	
	X1.1.5	0.9	0.19			valid	
	X1.1.6	0.94	0.12			valid	
	X1.1.7	0.94	0.12			valid	
	X1.1.8	0.17	0.97			invalid	
	X1.1.9	0.64	0.59			valid	
	X1.1.10	0.32	0.9			invalid	

X1.2	X1.2.1	0.59	0.65	0.83	0.5	valid	reliable
	X1.2.2	0.66	0.57			valid	
	X1.2.3	0.85	0.28			valid	
	X1.2.4	0.58	0.66			valid	
	X1.2.5	0.81	0.35			valid	
X1.3	X1.3.1	0.22	0.95	0.72	0.52	invalid	reliable
	X1.3.2	0.91	0.17			valid	
	X1.3.3	0.82	0.33			valid	
X1.4	X1.4.1	0.81	0.35	0.87	0.6	valid	reliable
	X1.4.2	0.66	0.57			valid	
	X1.4.3	0.8	0.36			valid	
	X1.4.4	0.8	0.36			valid	
	X1.4.5	0.68	0.53			valid	
X1.5	X1.5.1	0.61	0.63	0.81	0.43	valid	unreliable
	X1.5.2	0.75	0.44			valid	
	X1.5.3	0.22	0.95			invalid	
	X1.5.4	0.62	0.61			valid	
	X1.5.5	0.75	0.43			valid	
	X1.5.6	0.81	0.35			valid	
X1.6	X1.6.1	0.54	0.71	0.76	0.4	valid	unreliable
	X1.6.2	0.62	0.62			valid	
	X1.6.3	0.73	0.46			Valid	
	X1.6.4	0.76	0.42			valid	
X2.1	X2.1.1	0.42	0.82	0.77	0.5	invalid	reliable
	X2.1.2	0.8	0.35			valid	
	X2.1.3	0.84	0.3			valid	
	X2.1.4	0.6	0.64			valid	
X2.2	X2.2.1	0.74	0.45	0.81	0.58	valid	reliable
	X2.2.2	0.76	0.43			valid	
	X2.2.3	0.79	0.37			valid	
X2.3	X2.3.1	0.7	0.51	0.81	0.43	valid	unreliable
	X2.3.2	0.76	0.43			valid	
	X2.3.3	0.37	0.86			invalid	
	X2.3.4	0.74	0.45			valid	
	X2.3.5	0.63	0.61			valid	
	X2.3.6	0.67	0.56			valid	
X2.4	X2.4.1	0.43	0.82	0.80	0.5	invalid	reliable
	X2.4.2	0.79	0.37			valid	
	X2.4.3	0.86	0.26			valid	
	X2.4.4	0.72	0.48			valid	

Notes: the significance value of the validity and reliability of each parameter is: Standard (Std.) loading = 0.50; CR = 0.70; and VE = 0.50.

Structural Equations										
Y =	- 0.93	+ 1.00	- 0.15	+ 2.54	+ 0.67	- 3.14	+ 1.47	+ 0.78	- 1.51	
	(0.76)	(1.21)	(0.40)	(2.31)	(1.17)	(3.46)	(0.84)	(0.52)	(1.24)	
	-1.22	0.83	-0.38	1.10	0.57	-0.91	1.74	1.52	-1.22	
	+ 0.72*X2.4, Errorvar.= 0.55 , R ² = 0.45									
	(0.48)	(0.61)								
	1.48	0.90								

Fig 2. Structural Equation Model Test Output

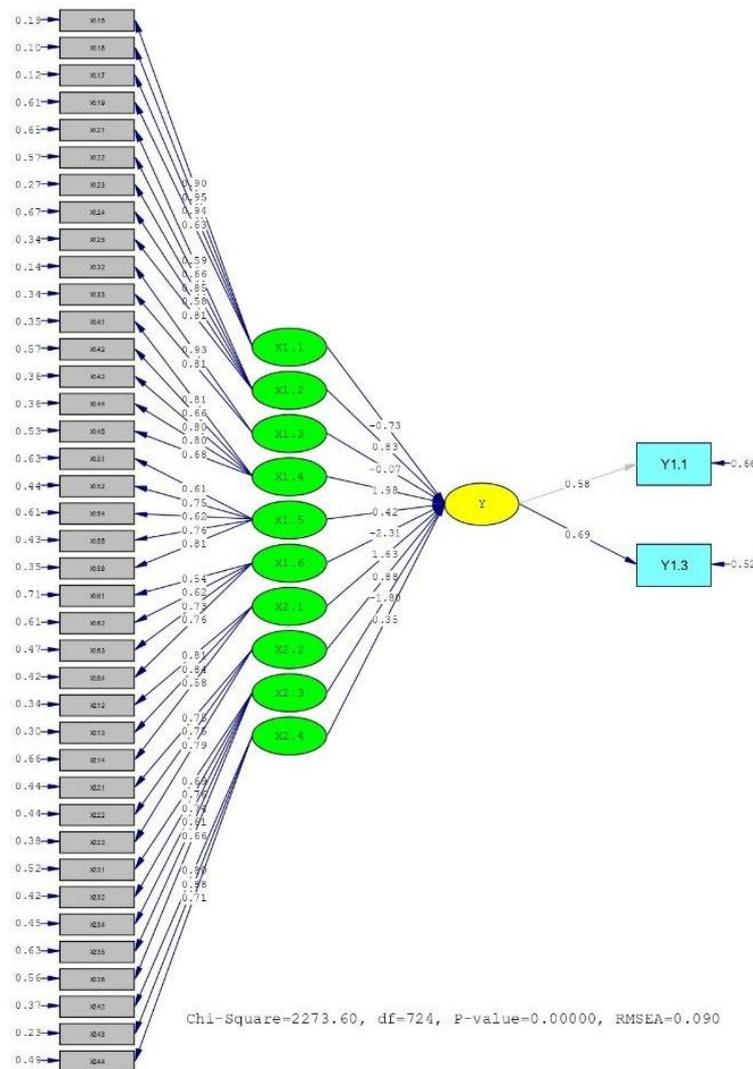


Fig 3. Modified Standardised Model Output

Evaluation of the structural model included an examination of the significance of the estimated coefficients. Items that were evaluated on the suitability of the structural model were the t-value and coefficient of structural equation and overall coefficient of determination (R²). The t-value is significant if the t-value is 1.96 in each causal relationship between latent variables. Based on the significance test of the t-count values and coefficients, there was no significant effect of the independent variables on Y and the R² is 0.45 (45%). From these results, it can be seen the p-value of the model remained at <0.05, so the model can be concluded not to have reached the model fit criteria. Therefore, it is necessary to improve (modify) the model. Modification of the model is shown in Figure 3. The results of the model modification were evaluated by evaluating the measurement model, the structural model, and the overall model (GOF). The evaluation of the standardized model is shown in Table 4.

Table 4. Validity and Reliability Test Results for Modified Model

Latent Variable	Constructs	Std Loading $\geq 0,5$	Error Var	Reliability		Validity Status	Reliability Status
				CR $\geq 0,7$	VE $\geq 0,5$		
Y	Y1.1	0.58	0.66	0.58	0.41	valid	unreliable
	Y1.3	0.69	0.52			valid	
X1.1	X1.1.5	0.9	0.19	0.92	0.7	valid	reliable
	X1.1.6	0.95	0.1			valid	
	X1.1.7	0.94	0.12			valid	
	X1.1.9	0.63	0.61			valid	
X1.2	X1.2.1	0.59	0.65	0.83	0.5	valid	reliable
	X1.2.2	0.66	0.57			valid	
	X1.2.3	0.85	0.27			valid	
	X1.2.4	0.58	0.67			valid	
	X1.2.5	0.81	0.34			valid	
X1.3	X1.3.2	0.93	0.14	0.86	0.76	valid	reliable
	X1.3.3	0.81	0.34			valid	
X1.4	X1.4.1	0.81	0.35	0.87	0.6	valid	reliable
	X1.4.2	0.66	0.57			valid	
	X1.4.3	0.8	0.36			valid	
	X1.4.4	0.8	0.36			valid	
	X1.4.5	0.68	0.53			valid	
X1.5	X1.5.1	0.61	0.63	0.84	0.51	valid	reliable
	X1.5.2	0.75	0.44			valid	
	X1.5.4	0.62	0.61			valid	
	X1.5.5	0.76	0.43			valid	
	X1.5.6	0.81	0.35			valid	
X1.6	X1.6.1	0.54	0.71	0.76	0.4	valid	unreliable
	X1.6.2	0.62	0.61			valid	
	X1.6.3	0.73	0.47			valid	
	X1.6.4	0.76	0.42			valid	
X2.1	X2.1.2	0.81	0.34	0.79	0.57	valid	reliable
	X2.1.3	0.84	0.3			valid	
	X2.1.4	0.58	0.66			valid	
X2.2	X2.2.1	0.75	0.44	0.81	0.58	valid	reliable
	X2.2.2	0.75	0.44			valid	
	X2.2.3	0.79	0.38			valid	
X2.3	X2.3.1	0.69	0.52	0.82	0.48	valid	unreliable
	X2.3.2	0.76	0.42			valid	
	X2.3.4	0.74	0.45			valid	
	X2.3.5	0.61	0.63			valid	
	X2.3.6	0.66	0.56			valid	
X2.4	X2.4.2	0.8	0.37	0.84	0.64	valid	reliable
	X2.4.3	0.88	0.23			valid	
	X2.4.4	0.71	0.49			valid	

Based on Table 4, all indicators show valid criteria. The constructs X1 and X2 meet the reliable criteria, while the constructs Y are unreliable. However, the level of reliability of the construct Y is higher than before the modification of the model.

Structural Equations									
Y =	- 0.73	+ 0.83	- 0.069	+ 1.98	+ 0.42	- 2.31	+ 1.63	+ 0.88	- 1.80
	(0.58)	(1.01)	(0.32)	(1.80)	(0.88)	(2.71)	(0.85)	(0.55)	(1.34)
	-1.26	0.82	-0.22	1.10	0.48	-0.85	1.91	1.60	-1.34
	+ 0.35*X2.4, Errorvar. = 0.63 , R ² = 0.37								
	(0.34)	(0.46)							
	1.00	1.37							

Fig 4. Modified Structural Equation Model Test Output

Evaluation of the overall fit of the model (GOF) can show whether or not the research model is applied to the sample. GOF test results are shown in Table 5.

Table 5. Modified Model GOF Test Results

GOF	Acceptable match rate	Model Index	Description
Chi-Square	Chi-Square \leq 2df (good fit), 2df < Chi-Square \leq 3df (marginal fit)	2273.6	good less
p-value	$p \geq 0,05$	0	good less
NCP	The smaller the better	1549.6	good less
GFI	$GFI \geq 0,9$ (good fit), $0,8 \leq GFI \leq 0,9$ (marginal fit)	0.7	good less
RMR	$RMR \leq 0,05$	0.11	good less
RMSEA	$0,05 < RMSEA \leq 0,08$ (good fit), $0,08 < RMSEA \leq 1$ (marginal fit)	0.09	marginal fit
ECVI	The closer to the saturated ECVI value, the better	9.69	good fit
NNFI	$NNFI \geq 0,9$ (good fit), $0,8 \leq NNFI < 0,9$ (marginal fit)	0.96	good fit
NFI	$NFI \geq 0,9$ (good fit), $0,8 \leq NFI < 0,9$ (marginal fit)	0.94	good fit
AGFI	$AGFI \geq 0,9$ (good fit), $0,8 \leq AGFI < 0,9$ (marginal fit)	0.65	good less
RFI	$RFI \geq 0,9$ (good fit), $0,8 \leq RFI < 0,9$ (marginal fit)	0.93	good fit
IFI	$IFI \geq 0,9$ (good fit), $0,8 \leq IFI < 0,9$ (marginal fit)	0.96	good fit
CFI	$CFI \geq 0,9$ (good fit), $0,8 \leq CFI < 0,9$ (marginal fit)	0.96	good fit
PGFI	$PGFI \geq 0,5$	0.59	good fit
PNFI	$PNFI \geq 0,5$	0.83	good fit
AIC	The closer to the saturated AIC value, the better	2547.6	good less
CAIC	The closer to the saturated CAIC value, the better	3174.51	good less
CN	$CN \geq 200$	114.55	good less

Notes: NCP = Non-Centrality Parameter; SNCP = Scaled Non-Centrality Parameter; GFI = Goodness-of-Fit Index; RMR = Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation; ECVI = Expected Cross-Validation Index; AGFI = Adjusted Goodness-of-Fit Index;

TLI/ NNFI = Tucker-Lewis No./ Non Normed Fit Index; NFI = Normed Fit Index; RFI = Relative Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; PNFI = Parsimonius Normed Fit Index; PGFI = Parsimonius Goodness-of-Fit index; AIC =Akaike Information Criterion; and CAIC = Consistent Akaike Information Criterion.

Based on the analysis, it shows that 9 out of 18 GOFs reached the criteria of good fit, 1 measure shows the criteria of marginal fit, and 9 measures indicated the criteria of good less fit in the new model. Based on these criteria, it can be concluded that the construct model represents the condition of the variables in the sample of respondents involved.

Table 6. Final Items from the Modified Model

Variables/ Indicator	Code	Score	Criteria
Intention to Share Knowledge (Y)			
(U) I have no intention of sharing my knowledge with more departmental members	Y1.1	6.06	High
I intend to share my knowledge with other organizational members less frequently in the future	Y1.3	6.26	High
Expected Rewards and Associations (X1.1)			
My knowledge sharing would strengthen the ties between existing members and myself in the organization	X1.1.5	6.40	High
My knowledge sharing would get me well-acquainted with new members in the organization	X1.1.6	6.44	High
My knowledge sharing would enable me to associate more with other members in the organization	X1.1.7	6.39	High
My knowledge sharing would create strong bonds with members who have common interests in the organization	X1.1.9	6.22	High
Expected Contribution (X1.2)			
(U) My knowledge sharing would not help others in the organization to solve problems	X1.2.1	6.03	High
My knowledge sharing would create new business opportunities for the organization	X1.2.2	5.78	High
My knowledge sharing would improve work processes in the organization	X1.2.3	6.16	High
(U) My knowledge sharing would reduce the productivity in the organization	X1.2.4	6.18	High
My knowledge sharing would help the organization to achieve its performance objectives	X1.2.5	6.27	High
Structure (X1.3)			
The university designs processes to facilitate knowledge exchange across departmental boundaries	X1.3.2	5.83	High
The university encourages people to go where they need for knowledge regardless of structure	X1.3.3	5.84	High
Affiliation to Institution (X1.4)			
Members of my department keep close ties with one another	X1.4.1	6.25	High

(U) Members of my department often fail to consider other members' standpoint	X1.4.2	5.61	High
Members of my department have strong feeling of one team	X1.4.3	6.08	High
(U) Members of my department do not co-operate well with each other	X1.4.4	6.00	High
Generally speaking, I respect and put into practice my colleagues' decisions	X1.4.5	6.16	High

Technology Platform (X1.5)

(U) My organization does not foster the development of 'human-centred' information technology	X1.5.1	6.08	High
Technology links all members of the organization together and to relevant external institutions	X1.5.2	6.08	High
Whenever a new technology involving communication is introduced, training is quickly provided	X1.5.4	5.66	High
In this university, information systems and software are designed to be user friendly	X1.5.5	5.83	High
Technology that supports collaboration is rapidly placed in the hands of employees	X1.5.6	5.81	High

Affiliation to Discipline (X1.6)

The views of other academics are important to me	X1.6.1	6.29	High
(U) I have very little contact with other academics of the same discipline	X1.6.2	6.00	High
Members of my department feel a strong loyalty to their academic discipline	X1.6.3	6.07	High
(U) Academics in my discipline consider that building and maintaining academic networks is not a high priority	X1.6.4	5.99	High

Autonomy (X2.1)

(U) People do not have the freedom to plan their tasks	X2.1.2	5.86	High
(U) People do not have the freedom to make major decisions regarding their tasks	X2.1.3	5.88	High
Each person can set his/her own targets	X2.1.4	5.93	High

Normative Beliefs on Knowledge Sharing (X2.2)

(U) My Head of Department does not think that I should share my knowledge with other members in the organization	X2.2.1	5.73	High
My manager thinks that I should share my knowledge with other members in the organization	X2.2.2	5.92	High
My colleagues think I should share knowledge with other members of the organization	X2.2.3	5.89	High

Leadership (X2.3)

Members of my department have a clear view of the direction of the institution	X2.3.1	6.03	High
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(U) The opinions of members of my department are not sought and valued by the Senior Management Team	X2.3.2	5.91	High
(U) Objectives are given to me which are often unreasonable	X2.3.4	5.63	High
I can trust my manager's judgement to be sound	X2.3.5	6.11	High
(U) My manager shows favouritism towards specific persons	X2.3.6	5.29	Moderate
Attitude toward Knowledge (X2.4)			
Sharing my knowledge with other organizational members is a valuable experience	X2.4.2	6.47	High
Sharing my knowledge with other organizational members is a wise move	X2.4.3	6.34	High
Share my knowledge in an appropriate and effective way	X2.4.4	6.23	High

*Note: The U letter (U) before items shows the statement is an unfavourable or negative statement.
Source of Items: Fullwood & Rowley (2017)*

In this study, we tried to build an empirical model that can be used to predict the variable knowledge sharing intention among university lecturers. The results of this study contribute to the related literature in two significant ways. First, we use CFA to test the reliability and dimensions of the knowledge sharing intention scale based on relevant theories and references. Instead of relying on the selection of indicators on the Theory of Planned Behaviour, this study is complemented by indicators based on the Theory of Social Exchange and strengthened by the results of relevant previous studies. This study then divides these indicators into two variables, namely personal forces and institutional forces.

Second, the final item confirmed as the result of this research can easily be adopted to measure the knowledge sharing intention of lecturers in other HEIs in Indonesia. It allows us to empirically examine the knowledge sharing intentions of faculty members in HEIs and decide which variables can be intervened with relevant policies so as to increase the knowledge sharing intention. Creating a new culture in an organisation will take quite a long time, however it has to start with a small step forward. Implementing policies to support knowledge sharing practices will build better engagement among lecturers and grow a sense of belonging as part of the institution. The final goal of building better engagement between them actually is to provide effective support to increase students' performance (Tew Abdullah, Roslim & Mohd Salleh, 2022). Lašáková, Bajžíková and Dedze (2017) stated that there can be certain "disengagement" in relation to HEIs and education policy makers, business, students as well as between higher education institutions' managers and their subordinates which could be major innovation-related challenges in HEIs. Therefore, this issue should be addressed further to fasten the knowledge sharing culture in HEIs.

5. Conclusion

Based on this study, the examined model comprises both personal and institutional forces which are confirmed as predictors of knowledge sharing intention among Indonesian faculty members. In response to the new education policy in Indonesia which needs more collaboration among HEIs, this research builds a valid instrument to measure and intervene knowledge sharing based on Indonesian lecturers and existing academic culture in Indonesian HEIs. The modified items excluded 12 items from the original items written by Fullwood and Rowley (2017) to form a more fit model at the modification stage. This adjustment is needed in order to relate the instruments to local characteristics and conditions

of the Indonesian lecturers. Future research needs to focus more on examining knowledge sharing intentions in broader regions in Indonesia as the personal characteristics and academic culture are quite different considering the multicultural background of Indonesian lecturers.

6. Co-Author Contribution

The authors affirmed that there is no conflict of interest in this article. Author 1 built the concept of knowledge sharing intention and related theories, and prepared the literature review. Author 2 carried out the fieldwork, wrote the research methodology and did the data entry. Author 3 analysed the data, wrote discussion sessions, and did the proofread for the whole article. Author 4 and Author 5 helped out the statistical analysis and provided related references.

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