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Knowledge Sharing in Public Research Universities

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Research Article

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Abstract

Knowledge sharing is an important driver of innovation, cooperation, and excellence in higher education institutions. This study aims to investigate the factors that influence KS in public research universities in Ethiopia. Using a quantitative research approach, data were collected from faculty members in selected universities in Ethiopia. Smart PLS-SEM was employed to examine the relationship between predictors and KS. This study contributes to the literature on KS by providing empirical findings on the factors influencing KS in higher education in Ethiopia and their practical implications for policymakers and university officials seeking to promote cooperation and learning in their institutions.

1 Introduction

Knowledge Sharing (KS) is the exchange of explicit and tacit knowledge among members of organizations (Lee et al., 2010). Today, the importance of sharing knowledge in facilitating learning within organizations is generally recognized. It has recently emerged as an important area of study in KM. In most countries, educational systems and society do not foster KS. Individualistic behaviors observed in workplace and school teamwork activities that encourage knowledge hoarding. These 'selfish' attitudes frequently translate into the workplace, where hoarding knowledge becomes a challenge for organizations.

In contrast, Asian cultures have a group-based attitude that inspires sharing. For example, the Japanese regard their employers as family and are frequently loyal throughout their careers. Such a culture encourages trust among coworkers, which might aid in the socialization process of KS. KS provides a mechanism for relationships in organizations (Ribière & Sitar, 2003; Liu & Zhai, 2024).

Efforts are being made to find the most effective techniques of sharing knowledge to improve organizational performance. Furthermore, in higher education, KS is becoming increasingly global and diversified, and remains a key competitive advantage for schools and universities. It serves as the major resource for creating value and enhancing operational efficiency (Yang, 2013; Almeida & Soares, 2014). Universities are knowledge-intensive environments that play an important role in the creation and dissemination of knowledge through research and publications. Additionally, universities promote learning through their teaching and research training programs. As a result, it is acceptable to expect universities to take a proactive approach to developing knowledge management (KM) strategies and to have a thorough understanding of how to manage and maximize the value of their knowledge assets. Higher education institutions are increasingly reservoirs of knowledge (Fullwood et al., 2013; Sohail, 2009). In institutions, when KS practices are in place, they will maintain sustainable quality research outputs (Mahamed Ismail et al., 2015).

There are many factors affecting KS practices in universities. The most influential factor affecting KS is leadership practices in the organizations. Leadership behavior is vital because leaders can create conditions that enable participants to develop and utilize their skills and share their individual knowledge. Another key factor is organizational culture (OC), often identified as a major obstacle to KM

practices. OC is essential for facilitating KS practices in organizations. When an OC supports KS and exists an appropriate reward (RW) system, members are more motivated to share and learn from each other (Ribière & Sitar, 2003; Javaid, 2020; Wang & Noe, 2010; Durmusoglu et al., 2014; Bryant, 2003; Nguyen & Mohamed, 2011; Politis, 2004).

There are motivational factors that pushed to undertake this study in Ethiopian universities. The first factor is KS in academic institutions, an area that has received attention from researchers worldwide for the past two decades; however, most of the available literature on KS is in business organizations (Kassa & Ning, 2025). Universities are directly involved in the production, distribution, and application of knowledge, but there are limited contributions to understanding KS in universities compared with other sectors (Al-Kurdi et al., 2018; Javaid, 2020). The second motivational factor is that knowledge hoarding behavior is flourishing even when employees are encouraged to share their knowledge in organizations (Muqadas et al., 2017). The third gap is that KS culture among academics in HEIs is individualistic and self-serving (Fullwood et al., 2013). Lastly, the lack of a research culture in these public universities is another hurdle for KS, especially in developing countries like Ethiopia (i.e., a lack of international conferences, few efforts to conduct research seminars and webinars, limited workshops on research software training, and no proper guidance on research methods). KS practices require a supportive culture and employees' intentionality to share their knowledge, which is not found in public sector universities (Muqadas et al., 2017). The study examined the determinants of KS in public research universities in Ethiopia.

2 Hypothesis Development

2.1 Knowledge sharing

KS is the exchange of experiences, events, thoughts, or understanding to develop deeper insights and fulfill short-term desires. It requires the production of appropriate knowledge by coworkers within the organization. KS is a voluntary practice in which workers share their new knowledge with colleagues. It demands employee proactive participation in the organization (Than et al., 2024; Sohail, 2009; Grant, 2011; Nonaka & Takeuchi, 1996). KS is challenging within the organization when workers become reluctant to share it. KS requires externalizing and combining individual and group knowledge to create organizational knowledge (Hsu et al., 2007; Lee & Choi, 2003).

Tacit KS serves as the foundation of socialization, whereas explicit KS enables collaboration within specific organizations. Externalization and internalization procedures require both tacit and explicit sharing of knowledge to transform these two types of knowledge. Explicit KS refers to practically all formalized kinds of KS inside organizations. Effective tacit KS depends on people's willingness and ability to communicate what they know and to apply what they learn (Nonaka & Takeuchi, 1996; Wang & Wang, 2012). To gain mutual benefits, KS needs collaboration among individuals/groups. Within an organization, KS is critical for preserving valued history, learning new techniques, addressing challenges,

building core competencies, launching new projects, and eventually establishing a competitive edge (Durmusoglu et al., 2014; Nguyen & Sharma, 2024; Chiu et al., 2006).

2.2 Relationship of Constructs

2.2.1 Knowledge-oriented leadership and KS

Leadership is crucial in knowledge-based organizations, where knowledge workers value leaders who demonstrate genuine interest and dedication to advancing knowledge and learning. Leaders need to guide knowledge workers in acquiring and applying information to achieve the organization's knowledge goals. A knowledge-oriented leadership approach emphasizes the importance of KM (KM) across the organization to spot and leverage opportunities for innovation (Donate & Sánchez de Pablo, 2015; Teece, 2000). Transformational Leadership (TF) is important for idealized influence, inspirational motivation, intellectual stimulation, and individual consideration. This leadership style is considered a catalyst for the development of dynamic capabilities (Jahani, 2011; Lee et al., 2010; Bass, 1985; Edú-Valsania et al., 2016).

Knowledge-oriented leadership (KOL) is a leader's behavior that fosters the creation, sharing, and utilization of new knowledge, leading to a shift in collective outcomes. It should also tailor its approach to the nature of each KM (KM) initiative, assessing results and motivating knowledge workers based on the specific KM practice. Similarly, for KM exploitation activities, knowledge-oriented leadership, from a more transactional perspective, is likely to enhance the willingness to utilize existing knowledge. To effectively manage explicit knowledge through exchange and combination, and tacit knowledge through communication, leaders should employ a blend of managerial (transactional) and visionary (transformational) leadership styles (Donate & Sánchez de Pablo, 2015; Ribière & Sitar, 2003; Donate & Sánchez de Pablo, 2015; Shehzad et al., 2022; Naqshbandi & Jasimuddin, 2018).

To foster a culture of KS, among employees to drive innovation and gain an advantage leaders need to adjust their behavior based on the situation, supporting both the exploration and exploitation of knowledge. According to the goal theory, leaders should tailor their approach to fit the context. Leadership behaviors that lack understanding of KM values and essential knowledge-oriented skills often result in knowledge retention (Jahani, 2011; Liu et al., 2022; Le & Lei 2019). Transformational leaders offer guidance, encourage listening and idea sharing, and provide feedback to address potential shortcomings among employees and followers. Leaders play a role in shaping a cultural paradigm by steering its course (Nguyen & Mohamed, 2011).

Transactional leadership (TL) behavior creates a conducive environment and allots sufficient resources to foster the KS. The leaders attempted to motivate individual workers to generate new ideas, share them with coworkers, and test their feasibility. Leaders focused on the development of intellectual capacity and exploited the cognitive capacity of workers to create, share, and transfer their knowledge at individual and organizational levels (Bryant, 2003; Le & Lei, 2019). Additionally, the contingent reward

component of TL has a significant relationship with KS (Rawung et al., 2015; Nguyen & Sharma, 2024). Therefore, we can propose the following hypothesis;

H_1: TF behavior has a significant relationship with KS in the research universities.

H_2: TL behavior has a positive relationship with KS in the research universities.

2.2.2 Reward and KS

Rewards (RW) can be monetary or non-monetary. Monetary RW include bonuses, incentives, and other financial benefits, whereas non-monetary RW include certificates, public recognition, and expressions of gratitude. Motivational factors and specific RW for these activities enable the organizations to create optimal conditions and implement initiatives for KS and conversion, ultimately fostering the development of new ideas (Javaid, 2020; Nonaka & Takeuchi, 1996). Human resource practices, including incentive compensation programs, performance evaluations, and face-to-face interactions, encourage KS among R&D professionals by enhancing their perceived self-efficacy and willingness to share knowledge (Liu & Liu, 2011; Fullwood et al., 2013; Amayah, 2013). The lack of incentives is often seen as a significant barrier to cross-cultural knowledge transfer. Incentives like recognition and RW are recommended as effective strategies to encourage information sharing and foster a supportive culture. Organizational benefits, such as higher salaries, have been shown to positively correlate with the frequency of contributions to KM systems, particularly when employees feel a strong affiliation with the organization (Wang & Noe, 2010). Reward schemes significantly influence knowledge-sharing behavior within institutions, enhancing KM performance and addressing productivity challenges. However, RW for KS may be less effective in both formal and informal interactions. Misalignment between KS and RW can negatively affect KS practices in public sector universities (Muqadas et al., 2017; Lee & Ahn, 2007; Jahani, 2011; Lee & Ahn, 2007). A reward system is used to compensate for knowledge-sharing activities (Lee & Ahn, 2005). Hence, we can posit the hypothesis as follow;

H_3: Reward and KS has a positive relationship in the public research universities.

2.2.3 Organizational culture and KS

According to Schein, OC is "the way things are done" within an organization. Culture encompasses the shared norms, attitudes, and beliefs of all members within a company (Schein, 1984). Definitions of culture highlight its close connection to a group of people who have worked together over time, developing specific practices for addressing and solving problems, creating a collective identity, and working effectively. Culture shapes daily interactions, communication styles, acceptable behaviors, and the distribution of power and status. Successful practices become ingrained in the organizational culture and are passed on to new employees. Culture can be examined in the context of institutional or organizational settings (Ribière & Sitar, 2003; Javaid, 2020).

OC plays a vital role in KS practices. Cultural barriers arise from misunderstandings about the process, ineffective value concepts, and inappropriate knowledge-sharing behaviors. The most significant

obstacles associated with OC are restrictive cultural environment, lack of mutual trust, inadequate exchange opportunities, and insufficient encouragement for innovation. An unsupportive culture can negatively affect knowledge-sharing practices, particularly in public-sector universities (Ribière & Sitar, 2003; Yang, 2013; Muqadas et al., 2017).

There is also relationship between KOL and OC. Leadership behavior fosters values such as hard work, innovation, positive thinking, optimism, swift problem-solving, maximum Contribution, a non-punitive approach to mistakes, and risk-taking. In a knowledge organization, every individual is viewed as a source of creativity and productivity, providing the company with a unique and lasting competitive edge. OC can adjust the environment by influencing employees' daily interactions, behaviors, communication styles, and the organization's overall structure. Just as individuals have unique traits and behavioral styles, businesses each possess distinct cultures that impact their operations (Ribière & Sitar, 2003; Chang & Lee, 2007; Ribière & Sitar, 2003; Birasnav, 2010).

Figure 1. Theoretical framework of the study

KS Practices in the Universities

Organizational culture mediates knowledge-oriented leadership (KOL), RW, and KS. TF impact business culture establishing a supportive and trustworthy environment through their charismatic and individualized consideration traits. They adjust the culture based on internal and external changes. Managerial practices play a key role in communicating and embedding corporate values and beliefs within the workforce. (Durmusoglu et al., 2014; Birasnav, 2010). On the contrary, KS mediates the relationship between organizational factors and innovation (Erena et al., 2023). There is also a direct and indirect relationship between KOLs and organizational performance via KS (KS) in the UAE (Almatrooshi et al., 2020; Prentice et al., 2025). Thus, the hypothesis would be;

H_4: *Organizational culture and KS have a positive relationship in public research universities in Ethiopia.*

H_5: *Organizational culture mediates the relationship between KOL, RW and KS in public research universities in Ethiopia.*

3 Materials and Methods

3.1. Research Design, Sampling Techniques, and Instruments

The study applies an organization-based cross-sectional research design and implements a survey strategy (Walliman, 2021). The target population of the study is 7301 teachers and technical assistants from three universities: Hawasa, Arbaminch, and Addis Ababa. The sample size was determined using Yaman's formula with a 4% margin of error (Israel, 1992; Yamane, 1967). Hence, the total sample size is 576 academicians. The universities' locations and organizational structures differ; hence, the stratified

sampling technique was appropriate for selecting respondents. Stratification involves partitioning the sample into independent groups and then sampling within each group. This strategy helps ensure that groups on which information is desired are adequately sampled (Mcintosh et al., 2014).

The study variables are measured using Likert-scale questionnaires that range from 1 to 5. The study's endogenous variable (KS) five items were adapted from (Shehzad, et al., 2022), the study mediator variable (OC) 6 items were selected from (Yang, 2007), independent variables such as KOL items (6 for TF and 4 for TL) were adapted from (Bass & Bernard, 1990; Masa'deh et al., 2016), and reward for employees 5 items adapted from (Andreeva & Kianto, 2012).

3.2. Path analysis: To analyze the data, we used path analysis. It is a statistical technique used to describe the directed dependencies among a set of variables. It is an extension of multiple regression analysis and a specific type of Structural Equation Modeling (SEM). Path analysis allows researchers to model complex relationships between observed variables by specifying both direct and indirect effects. Path analysis helps analyze the association between exogenous, mediating, and endogenous variables using regression coefficients. The data quality issues (reliability and validity) must be addressed before conducting a causal or covariance-based analysis (Dash & Paul, 2021; Hair Jr et al., 2017; Sarstedt et al., 2021).

4 Results and Discussions

4.1 Demographic Variables

From a total sample size of 576 respondents, researchers collected 448 responses from three universities. Of the respondents, 25.4% were female and the remaining were male academicians. Regarding age, 3.6% of the respondents were below 25 years old, 51.3% were between 26 and 34 years old, and the remaining were above 35 years old. The respondents' educational qualifications were also collected from each university. Of the total respondents, 12.5% held a BA, 66.3% held an MA/MSc, 20.8% were PhD holders, and 0.4% were specialty graduates. Respondents' experience is vital to universities' knowledge-sharing practices. Among the respondents, 4.5% had served for less than 2 years, 28.8% had 2–4 years of experience, 22.5% had 4–6 years of experience, and 44.2% had more than 6 years of experience.

4.2 Measurement Model

4.2.1 Item loadings

Item loading, also known as factor loading, is the correlation between a variable and a factor. It shows how much variance in an observed variable is explained by a hidden variable (or factor). It indicates the degree of the association between an observed item (such as a questionnaire response) and the underlying construct it is supposed to assess. When the outer loading value is between 0.4 and 0.7, the decision should be made. According to Purwanto & Sudargini (2021)the loading factor value > 0.5 is still

acceptable. Thus, the loading factor value < 0.5 must be removed from the model. Items with factor loadings below 0.6 can be dropped, and the model fit is reassessed (Dash & Paul, 2021). The study's variable outer-loading results indicate that all items' loading is above 0.6. All constructs (OC, TF, TL and RW items) fulfill the threshold set by scholars (see Fig. 2).

Source: survey (2024)

4.2.2 Reliability of the Variables

The study developed a reflective measurement model, emphasizing the importance of the dependability of the individuals involved. In construct reliability assessment, it is common practice to focus on composite reliability as an estimate of a construct's internal consistency. Criteria such as Cronbach's alpha and composite reliability are frequently used to evaluate reflective measures (Hair et al., 2011) (see Table 1). Therefore, the study data is ready for analysis by using PLS and SEM methods.

Convergent validity assesses the average variance shared between a construct and its indicators, evaluating how well a construct explains the variance of its items. To measure this, the average variance extracted (AVE) for each construct's items is used. The AVE value is calculated by averaging the squared loadings of all indicators linked to a construct. An acceptable AVE is 0.50 or higher, indicating that the construct explains more than 50% of the variance in its elements on average (Dijkstra et al., 2014; Hair et al., 2020). The study's all construct AVE results indicate that the SEM-PLS algorithm result meets the requirements, with all construct AVEs exceeding 0.5.

Table 1
Reliability and AVE of constructs

Variables	**SEM-PLS algorism**	
	CR	**AVE**
KS Practices	0.804	0.548
OC	0.895	0.653
RW for Employees	0.903	0.719
TL Behavior	0.872	0.717
TF Behavior	0.910	0.690
Source: Survey (2024)		

4.2.3 Validity of the Constructs

Discriminant validity measurements ensure that constructs are distinct. To assess cross-loading, examine the indicator's association with its own construct and with other constructs. Discriminant validity assesses how well a construct is differentiated from other constructs and ensures that indicators distinctly represent only this construct (Dijkstra et al., 2014; Purwanto & Sudargini, 2021).

Fornell-Larcker criterion states that the value is higher than the correlation of the study variables can be acceptable. As it shown in Table 2, the study data under the SEM-PLS Algorithm method fulfill the criteria set by different authors (Hair et al., 2020; Hazirah et al., 2021) (Table 2).

Table 2
Fornell-Larcker criterion

Constructs	**SEM-PLS Algorism**				
	KS	**OC**	**RW**	**TL**	**TF**
KS	**0.740**				
OC	0.637	**0.808**			
RW	0.518	0.657	**0.848**		
TL	0.559	0.746	0.701	**0.847**	
TF	0.622	0.780	0.677	0.822	**0.830**
Source: Survey (2024)					

4.3 Hypothesis Testing and Discussions

4.3.1 Direct Association of Constructs

We evaluated the relationship between TF behavior and KS practices. We found it to be positive under the SEM-PLS algorithm, with a beta coefficient of 0.286 and a p-value of 0.000. This result is consistent with the finding of Nguyen and Sharma, (2024) that TF has a positive impact on online KS through job engagement.

The relationship between TL behavior and knowledge-sharing practices is positive but not significant in Ethiopian public research universities. Therefore, the proposed hypothesis H_1:TF behavior has positive relationship with KS in the research universities has been supported by, SEM-PLS algorism, while H_2: TL behavior has positive relationship with KS in the research universities has not been supported by the result of SEM-PLS algorism (see Table 3).

The other relationship investigated in this study is the relationship between employee RW and knowledge-sharing practices in Ethiopian public research universities. The SEM-PLS algorithm shows that employee RW have no positive, significant relationship with KS practices in Ethiopian public research universities (Table 3). However, this result is not consistent with the finding of Al-alawi et al. (2007) RW positively related to KS in organizations, RW negatively influence KS practices in public sector universities (Muqadas et al., 2017), reward system played a vital role in enhancing the knowledge-sharing attitude of faculty member (Javaid, 2020), the impact of organizational RW were found to be positively and significantly correlated with knowledge shared (Durmusoglu et al., 2014), reward significant effect on KS (Amayah, 2013), a poor linkage between KS and RW negatively influence KS

practices in public sector universities (Muqadas et al., 2017). Thus, based on the theory and conceptual framework (see Fig. 1), the hypothesis H3: Reward and KS have a positive relationship in public research universities has not been supported by the results of the SEM-PLS algorithm. The third direct relationship evaluated in this study is that between organizational culture and knowledge-sharing practices in Ethiopian public research universities. The regression results show a positive relationship between organizational culture and knowledge-sharing practices in Ethiopian public research universities. This result is consistent with the finding of Suppiah & Sandhu (2011) that organizational culture influences tacit KS behavior, and that clan culture has a positive influence on tacit KS behavior. Organizational culture played a vital role in enhancing the knowledge-sharing attitude of faculty member (Javaid, 2020), the impact of culture of KS were found to be positively and significantly correlated with KS (Durmusoglu et al., 2014), culture supportive KS, organization members are motivated to share and to learn from each other (Durmusoglu et al., 2014), organizational factors (organizational culture) are positively associated with KM (sharing) (Erena et al., 2023) and not consistent with the finding of Muqadas et al., (2017) unsupportive culture negatively influence KS practices in public sector universities. Hence, the hypothesis related to OC and KS practices, H_4: Organizational culture and KS have a positive relationship in public research universities in Ethiopia, has been supported by the study's results under the SEM-PLS algorithm (Table 3).

Table 3
Direct effect of Constructs

Variables	**SEM-PLS Algorism**	
	Original sample (O)	**P-values**
OC -> KS	0.361	0.000
RW -> KS	0.095	0.136
RW -> OC	0.174	0.000
TL -> KS	-0.012	0.872
TL -> OC	0.245	0.000
TF -> KS	0.286	0.000
TF -> OC	0.461	0.000
Source: Survey (2024)		

4.3.2 Indirect Association of Constructs

Organizational culture can facilitate KS in organizations and is considered a mediator in this study. Organizational culture refers to the values, beliefs, and norms that impact individuals' behavior inside the organization. It has a tremendous impact on how knowledge is generated, shared, and utilized among personnel. In this study, OC was treated as a mediator between the exogenous and endogenous variables. On the other hand, OC plays a mediating role between RW and KS practices, TF and KS

practices, and TL and KS practices (see Table 4). This result is similar with the findings of Durmusoglu et al., (2014) and Erena et al., (2023). Thus, the hypothesis associated with this relationship, H_5: Organizational culture mediates the relationship between KOL, RW, and KS in public research universities in Ethiopia, has been supported under the SEM-PLS algorithm (see Table 4).

Table 4
Mediation Effects

Relationship	Original sample (O)/Estimates	P values	Decision
RW -> OC -> KS	0.063	0.003	Full
TL -> OC -> KS	0.088	0.001	Full
TF -> OC -> KS	0.166	0.000	Partial
Source: Survey (2024)			

4.4 Theoretical Contribution of the Study

The study examined the relationships among KOL, RW, OC, and KS practices in Ethiopian public research universities. This research aims to contribute theoretically by integrating KOL and KM theories within the public sector. It expands leadership theory by highlighting specific behaviors and practices leaders should adopt to enhance KS, such as fostering open communication, providing learning support and resources, and recognizing knowledge-sharing behaviors. The study demonstrates how combining knowledge-oriented leadership (KOL), RW, and organizational culture can produce a synergistic effect, enhancing the influence on KS beyond the sum of individual efforts.

5 Conclusions

Partial Least Squares Structural Equation Modeling (PLS-SEM) for research on the nexus between knowledge-oriented leadership, employee RW, and organizational culture on KS practices, discussed several key insights and based on that, conclusions can be drawn as follows;

It requires a strong theoretical framework and theories regarding the relationship between leadership, RW, culture, and KS. Based on the previous analysis, the SEM-PLS algorithm meets all the thresholds set by scholars. Regarding the direct relationship, constructs OC and TF are positively associated with KS practices in Ethiopian public research universities. In this study, OC plays a mediating role between TF, TL, RW, and KS practices using the SEM-PLS algorithm.

6. Limitations and Future Research Directions

The study included limited variables and university teachers and technical assistants. Other staff, library workers, and administrative staff were not part of this study. The study can't compare different countries' universities' knowledge-sharing practices. This can be a limitation of this study. To suggest future

research directions, researchers should better study knowledge hiding in universities, as well as knowledge hoarding and exploitation in developing countries.

Abbreviations

KM: Knowledge management

KS: Knowledge sharing

TL: Transactional leadership

TF: Transformational leadership

RW: Reward

OC: Organizational culture

SEM-PLS: Structural equation modeling-partial least squares

Declarations

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Declaration of competing interests

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Ethical Approval: The need for formal ethics approval was waived by the Research Ethics Committee of the School of Government, University of International Business and Economics (UIBE) as the study involved anonymous survey data collection from workers with no invasive procedures and posed no more than minimal risk to participants. All procedures performed in this study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all participants involved in the study. Participants were informed about the purpose of the research, the voluntary nature of their participation, and their right to withdraw at any time without any consequences. All data were collected anonymously.

Consent for participants

Informed consent for participation and publication was obtained from all participants prior to data collection.

Data Availability

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

Consent to publish

Not Applicable

Authors' contributions

The author wrote the manuscript, administered the survey, and analyzed the data.

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Figures

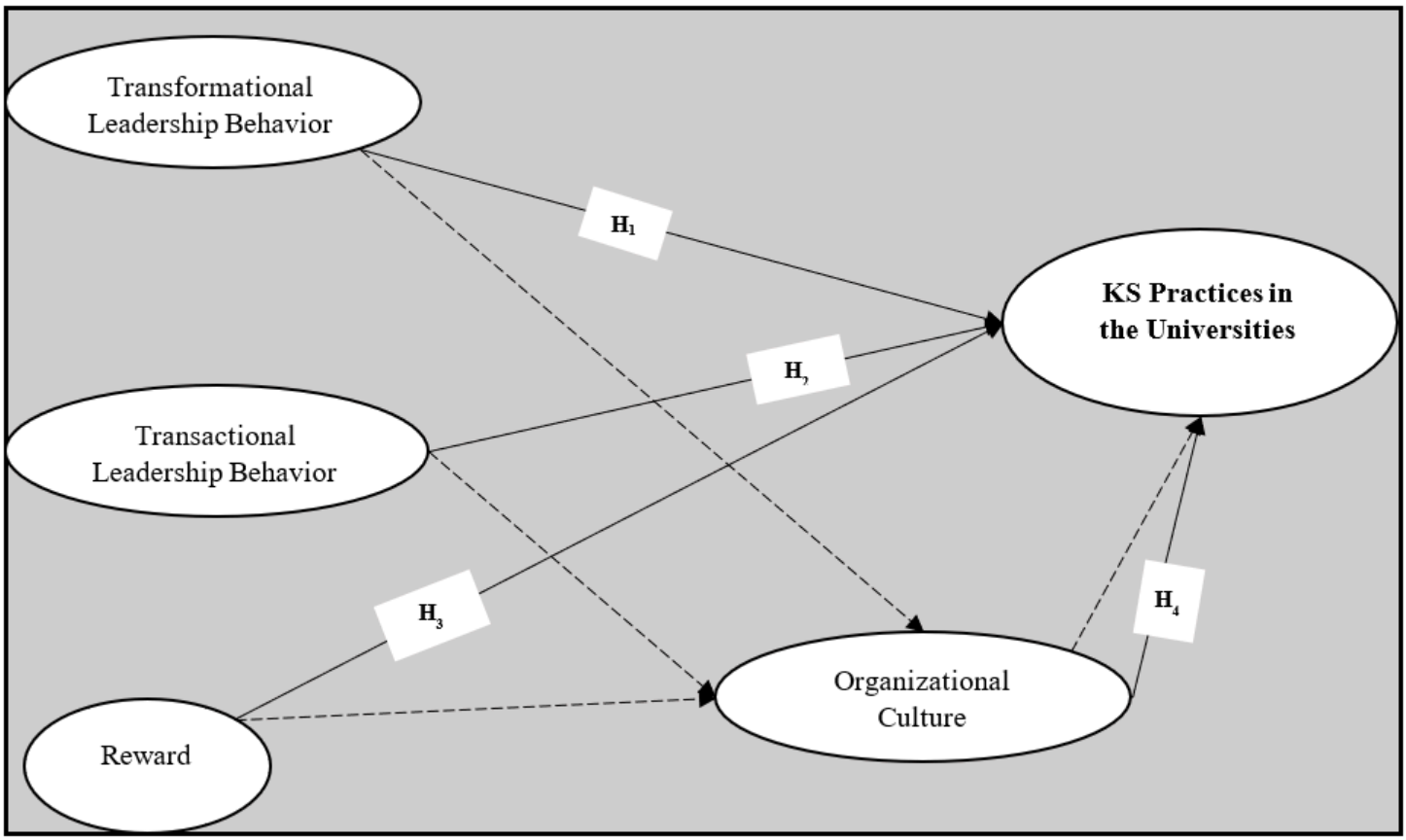


Figure 1

Theoretical framework of the study

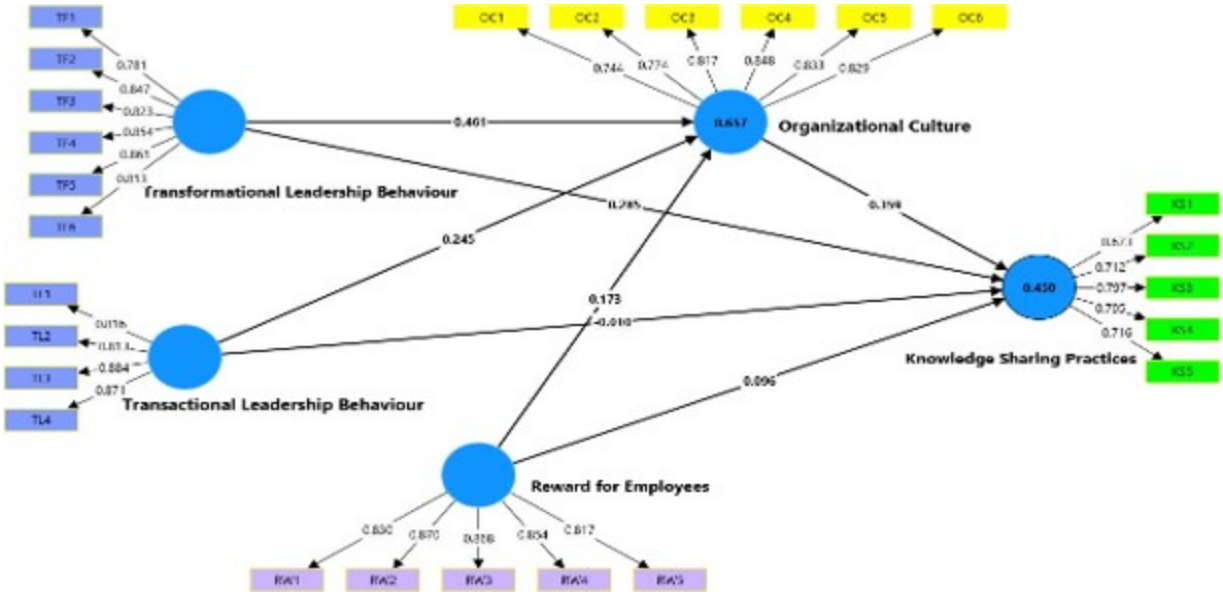


Figure 2

Items loading and R-square (SEM PLS algorithm)

Source: survey (2024)