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Cracking the code: The influence of personality traits on knowledge management culture and sharing behavior

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This research endeavors to ascertain the extent to which a knowledge-centered culture fosters the propensity for knowledge sharing within private universities. Furthermore, it seeks to discern the specific facets of the Big Five Personality Traits model that wield a moderating influence on the intricate nexus between knowledge-centered culture and the inclination to share knowledge. The methodology entailed the judicious application of stratified proportionate random sampling to solicit data, with academic staff from private universities constituting the respondent pool. The acquisition of research data transpired through the administration of a self-conducted questionnaire. The outcomes of this investigation unveil a positive correlation between a knowledge-centered culture and the propensity for knowledge sharing—a pivotal finding with far-reaching implications. Moreover, the findings illuminate that individuals exhibiting higher levels of extraversion and conscientiousness play a constructive moderating role in the interplay between knowledge-centered culture and knowledge-sharing behavior. Conversely, those with elevated scores in openness tend to exert a counterproductive moderating influence on this relationship. Intriguingly, the research also establishes that personality traits like agreeableness and neuroticism do not wield significant influence, as they fail to confer any notable moderating effect within the context of the correlation between knowledge-centered culture and knowledge-sharing behavior. The implications of this study are manifold and extend to the realm of academic leadership, offering a nuanced framework to devise policies and strategies that bolster knowledge sharing among academicians by fostering a nurturing knowledge culture. The findings also hold salience for upper echelons of private sector universities, especially within developing nations, and for policymakers seeking to sculpt and enact efficacious policies conducive to augmenting knowledge-sharing behavior. This, in turn, is anticipated to catalyze heightened work performance and operational efficiency.

1. Introduction

The significance of knowledge sharing resonates prominently within organizational landscapes, particularly in higher education institutions, driven by their inherent role in knowledge generation and dissemination (Al-Kurdi, El-Haddadeh, & Eldabi, 2018). The realm of higher education has undergone transformative shifts propelled by factors like faculty expertise, technology, and globalization, reshaping its contours (Mellow & Woolis, 2010). Essential to nurturing knowledge-based economies, the higher education commission assumes a crucial role in the development of nations, assessing education quality through indicators encompassing faculty and staff caliber, governance structures, infrastructure, international perspective, accountability measures, and curricular excellence (Higher Education Commission Pakistan, 2002). Yet, in Pakistan, the quality of education trails behind international benchmarks, prompting a quest for improved performance (Ghulam, 2017).

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Undoubtedly, organizational performance finds a direct nexus with the intellectual repository possessed by its members (Ma et al., 2014). Knowledge, a wellspring of power for gaining competitive advantage (Grant, 1996; Farrukh et al., 2020), underscores the essence of effective knowledge utilization for organizational success (Cui, 2017; Iqbal et al., 2020). Knowledge-sharing behavior stands as a conduit for this process, defined by the intentional dissemination and utilization of novel insights (Mueller & Matzler, 2011). The literature highlights the manifold benefits of fostering knowledge-sharing behavior—galvanizing innovation, augmenting team performance, spurring organizational transformation, and cultivating a productive environment (Muqadas et al., 2016). However, caution surfaces, suggesting that while knowledge sharing enhances productivity, success isn't guaranteed (Connelly et al., 2012). It's evident that organizations fostering knowledge sharing enjoy heightened efficiency, in contrast to those adhering to knowledge hoarding (Muqadas et al., 2016; Kularajasingam et al., 2021). A striking parallel surface between this discourse and the detrimental effects of withholding knowledge, leading to decreased efficiency and project delays (Mirzaee & Ghaffari, 2018). Investments in employee training and skill development underscore the importance of knowledge dissemination over knowledge hoarding, preventing resource loss upon employee departure (Muqadas et al., 2016). To unlock this potential, understanding the influences on knowledge-sharing behavior is paramount, with organizational culture occupying a pivotal role (Ipe, 2003). The divergent tendencies between public and private sector employees toward knowledge sharing can be traced to differing perceptions of power dynamics and autonomy (Muqadas et al., 2016; Raza & Awang 2020). Despite culture's pivotal role, research predominantly focuses on sharing culture, overlooking organizational knowledge culture (Peralta & Saladanha, 2014; Farrukh, et al., 2022). Additionally, the annual release of university rankings by Times Higher Education generates global competitiveness among institutions, evaluating them on aspects such as international outlook, research, teaching, knowledge dissemination, and faculty numbers (Times Higher Education, 1967). These rankings act as mirrors for institutions to gauge their performance and retain or improve their global standing. Regrettably, the 2019 rankings depicted a grim situation for Pakistani universities, with only three HEC-recognized institutions making the top 1000 list globally (Times Higher Education, 1967). Pakistan houses 205 higher education institutes, but none secured a place in the top 100, necessitating focused efforts to elevate their global status. This predicament underscores the pivotal role of faculty and research in enhancing academic standards (Al-Kurdi, El-Haddadeh, & Eldabi, 2018). Knowledge dissemination, individual capabilities, and resources prove pivotal for a university's triumph (Ramayah, Yeap, & Ignatius, 2013). However, knowledge sharing's importance remains under-researched within knowledge-based organizations, particularly universities, and its interaction with personality traits remains underexplored (Goh & Sandhu, 2013). Acknowledging knowledge's centrality, organizations strive to foster knowledge sharing, often reliant on a supportive culture as seen in private universities (Muqadas, Ilyas, & Aslam, 2016). Yet, this study contends that knowledge culture alone doesn't solely dictate knowledge-sharing behavior; individual personality traits, in synergy with the culture, may potentiate this relationship (Matzler et al., 2008; Sawan, 2021). Studies highlight the direct link between organizational performance and the knowledge owned by its members, further influenced by personality traits (Ma et al., 2014; Esmaeelinezhad & Afrazeh, 2018). Knowledge sharing enriches ideation, enhances performance, and nurtures a harmonious environment (Muqadas, Ilyas, & Aslam, 2016). In this intricate interplay, personality traits wield a substantial influence on knowledge-sharing behavior (Matzler et al., 2008). The widely accepted Big Five Personality Traits model – encompassing openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism – serves as a predictive framework for individual behavior (Jadin et al., 2013; Obrenovic et. Al., 2020). Amidst the convergence of culture and personality traits, this study employs Bandura's social cognitive learning theory, which elucidates the symbiotic relationship between personal factors (personality traits), behavior (knowledge-sharing behavior), and environment (knowledge-centered culture) (Bandura, 1997; Chang et al., 2021). Zaky (2015) underscores the synergy between nature and nurture, emphasizing their interplay in shaping individual behavior. In sum, the terrain of knowledge sharing and organizational performance is multi-dimensional. The higher education landscape, facing transformation, necessitates the harnessing of knowledge-sharing behavior to amplify its impact. A profound comprehension of the intertwining threads of culture, personality traits, and the triadic interplay proposed by Bandura, navigates this complex landscape. This study charts a course toward understanding the synergies between knowledge-centered culture, knowledge-sharing behavior, and the underlying influence of individual personality traits, accentuating the nuanced dynamics shaping organizational outcomes. This study, however, delves into the specific impact of a knowledge-centered culture on knowledge-sharing behavior, acknowledging the salience of individual personality traits in this dynamic interplay (Hwang, 2016; Halisah et. Al., 2021). Moreover, this research not only aids top management, policymakers, and consultants but also furnishes organizations with insights for fostering knowledge sharing through culture and personality-aligned selection strategies.

The research endeavors to address the following fundamental questions. Firstly, it aims to ascertain the positive impact of knowledge-centered culture on knowledge-sharing behavior within the academic staff of private higher educational institutes (RQ1). Secondly, it seeks to unravel whether personality traits, specifically those within the Big Five Personality Traits model, exert a moderating influence on the association between knowledge-centered culture and knowledge-sharing behavior in the context of academic staff within private higher educational institutions (RQ2). To achieve these goals, the research objectives have been defined. The primary objective (RO1) focuses on examining the extent to which knowledge-centered culture influences knowledge-sharing behavior within private higher educational institutes. The secondary objective (RO2) involves delving into the moderating function of personality traits in shaping the relationship between knowledge-centered culture and knowledge-sharing behavior within these institutes. Through a comprehensive exploration of these research questions and objectives, the study aims to contribute valuable insights to the realm of knowledge-sharing behavior in the context of private higher education, shedding light on the intricate interplay of organizational culture and individual personality traits.

2. Literature Review

2.1 Pakistani Studies on Personality Traits and Knowledge Sharing

Research on the interplay between enduring individual characteristics, such as personality traits, and knowledge-sharing behavior has predominantly focused on the public sector. For instance, Muqadas, Rehman, Aslam, and Rehman (2017) delved into knowledge-sharing barriers within public sector higher educational institutes, highlighting issues like employee favoritism and power dynamics hindering knowledge dissemination. Similarly, Bibi and Ali (2017) explored knowledge sharing among academic staff in public universities, discovering that job involvement and continuous commitment positively impact sharing behavior. In the context of private and public engineering firms, Abbas, Sajid, and Mumtaz (2018) investigated the relationship between personality traits like extraversion and openness, and innovative performance, revealing the moderating role of perceived organizational support (Muller & Schwieren, 2020; Schermer et al., 2020; Tanveer et. Al., 2021). These studies underscore the scarcity of literature on private-sector academics in Pakistan and the need to examine multiple personality traits as moderators in the knowledge-sharing context.

2.2 Why Big Five Inventory: Alternative Models of Personality Traits

The NEO Big Five personality scale, developed by Costa and McCrae, initially focused on three traits and evolved to include five core traits. While various personality scales emerged, the Big Five structure gained widespread acceptance for its cross-cultural reliability and validity. Alternative models, such as ZKA-PQ, exhibited limitations in internal consistency and cultural representation. This study employs the Big Five Inventory (BFI) due to its clarity, applicability, and suitability for educated respondents. BFI's concise format, with 44 items, ensures efficiency without sacrificing accuracy, setting it apart from other lengthy questionnaires.

2.3 Knowledge Sharing Behavior

The contemporary landscape is marked by the "knowledge age," where knowledge stands as a primary driver of wealth creation (Chatzoudes et al., 2015; Karyatun et al., 2023). Knowledge is bifurcated into tacit and explicit forms, the former encapsulating individual skills and experiences, inherently challenging to transfer, while the latter can be codified and disseminated through technology (Zaim et al., 2018, Tanveer et al., 2020). Knowledge sharing behavior involves the intentional exchange of mutual experiences and skills among organizational members, fostering idea exploration and enhancing team performance (Peralta and Saladanha, 2014; Farooq, 2024). This practice, a cornerstone of knowledge management, is essential for organizational success, benefiting decision-making, innovation, and overall performance (Cameli, Gelbard, & Reiter-Palmon, 2013; Abbas & Khan, 2023). However, reluctance to share knowledge often stems from competitive concerns and requires a conducive environment to flourish.

2.4 Knowledge-Centered Culture as a Predictor of Knowledge Sharing

A knowledge-centered culture encompasses shared values, principles, and beliefs that facilitate knowledge generation, sharing, and application (Ajmal, Helo, & Kekäle, 2010). This organizational culture, described as knowledge-friendly, shapes employee behaviors and intentions regarding knowledge sharing (Davenport, De Long, & Beers, 1998; Shin, 2004). While some argue that organizational culture hinders knowledge management, others assert its role in fostering knowledge-sharing practices (Gold, Malhotra, & Segars, 2001). Cardoso, Meireles, and Peralta (2012) emphasize that fostering a knowledge-sharing culture enhances organizational capability, performance, and employee satisfaction. Bandura's internal perspective of social cognitive theory supports the notion that environment (Knowledge-Centered Culture) and behavior (Knowledge Sharing Behavior) mutually influence each other (Bandura, 1997; Hu et al., 2023). Hence, this study hypothesizes a positive influence of knowledge-centered culture on knowledge-sharing behavior.

H_1: *Knowledge-centered culture has a positive and significant influence on knowledge-sharing behavior.*

2.5 Personality Traits and Knowledge Sharing

The dynamics of knowledge sharing encompass both personal intent and contextual influences (Yoo and Torrey, 2002; Durst et al., 2024). Individual attributes and attitudes significantly predict knowledge-sharing behavior (Esmaeelinezhad and Afrazeh, 2018; Lotfi, Muktar, and Ologbo, 2016). Personality traits provide a lens for studying individual behavior (Jadin, Gnambs, and Batinic, 2013), with the Big Five Personality (BFP) trait model, comprising extraversion, conscientiousness, agreeableness, openness to experience, and neuroticism, being a recognized predictor (Costa and McCrae, 1992). Extravert individuals are sociable and active, while conscientious individuals are diligent and goal-oriented (Pawlowska et al., 2014). Openness to experience characterizes the imaginative and nontraditional, agreeableness denotes kindness and optimism, and neuroticism reflects emotional instability (Jeronimus et al., 2014). The study underscores how personality traits interact with organizational knowledge culture to shape knowledge-sharing behavior.

2.6 The Moderator Role of Extroversion

Extroversion, a personality trait, influences knowledge-sharing behavior. Extroverts are outgoing, energetic, and sociable (Lotfi, Muktar, and Ologbo, 2016). They exhibit higher participation in knowledge sharing (Wang, Noe, and Wang, 2014), often driven by their reciprocity desire and sociability (Esmaeelinezhad and Afrazeh, 2018). Social cognitive theory by Bandura (1997) emphasizes the interaction between personal factors, environment, and behavior. Consequently, this study hypothesizes that extroverts, when exposed to a knowledge-centered culture, will share more knowledge due to their sociable and bold nature.

H_2: *Extraversion positively moderates the relationship between knowledge-centered culture and knowledge-sharing behavior.*

2.7 The Moderator Role of Agreeableness

Individuals scoring high on agreeableness exhibit traits such as politeness, friendliness, cooperation, and cheerfulness (Lotfi, Muktar, and Ologbo, 2016). Their courteous and sympathetic demeanor leads them to value mutual interests over competition, fostering a collaborative approach (Unal, Temizel, and Eren, 2017). Mueller and Matzler (2011) emphasize that those high in agreeableness tend to document knowledge, enabling smoother knowledge-sharing interactions. This inclination aligns with organizational objectives. Lotfi, Muktar, and Ologbo (2016) suggest that agreeable individuals are inclined to disseminate knowledge due to their cooperative and supportive nature. Similarly, Esmaeelinezhad et al. (2018) uncover a significant correlation between agreeableness and knowledge sharing. Bandura's social cognitive theory (1997) underscores the interplay of innate factors (BFP), environment (KCC), and behavior (KSB). Given this, it's plausible that providing a knowledge-centered culture to highly agreeable individuals could enhance knowledge-sharing behavior within the organization. Their cooperative and documentative tendencies align with the requirements for effective knowledge sharing. Thus, this study posits the third hypothesis:

H_3: *Agreeableness positively moderates the relationship between knowledge-centered culture and knowledge-sharing behavior.*

2.8 The Moderator Role of Conscientiousness

Conscientiousness, as a personality trait, encompasses qualities of responsibility, trustworthiness, organization, purposefulness, and diligence (Pawlowska, Westerman, Bergman, and Huelsman, 2014). Macsinga et al. (2015) affirm that individuals scoring high on conscientiousness demonstrate a proclivity for knowledge sharing due to their industrious work ethic. They are dedicated to their tasks. Notably, Esmaeelinezhad et al. (2018) highlight that those with a high score in conscientiousness also anticipate reciprocal behavior from the organization in exchange for their knowledge-sharing contributions. Lotfi, Muktar, and Ologbo's (2016) study aligns with this, showcasing a significant relationship between conscientiousness and knowledge-sharing behavior. Nevertheless, Esmaeelinezhad et al.'s (2018) research in Iran yielded contrasting results. Furthermore, Matzler, Renzl, Müller, Herting, and Mooradian (2008) posit that individuals with a strong conscientious disposition are inclined to employ knowledge databases for sharing purposes, contrasting with those with lower scores. Matzler et al. (2008) further suggest that conscientious individuals exhibit an eagerness to share their knowledge and experiences, devoid of reluctance. Gupta (2008) echoes these findings. Bandura's social cognitive theory (1997) underscores the interplay between an individual's behavior (KSB), personal factors (BFP), and environment (KCC), known as reciprocal determinism. In light of this, offering a knowledge-sharing culture to conscientious individuals may augment their participation due to their cooperative, trustworthy, and participatory nature. Hence, this study postulates the fourth hypothesis:

H_4: *Conscientiousness positively moderates the relationship between knowledge-centered culture and knowledge-sharing behavior.*

2.9 The Moderator Role of Openness to Experience

Openness to experience, a fundamental dimension of the Five-Factor Model (FFM), is widely acknowledged for its expansive scope (Anwar, 2016). Afrazeh (2018) underscores that individuals with high scores in this trait tend to exhibit traits such as creativity, imagination, ingenuity, non-conventional thinking, and an affinity for the arts. Numerous researchers, including Esmaeelinezhad and Afrazeh (2018) and Lotfi, Muktar, and Ologbo (2016), regard it as a pivotal predictor of knowledge sharing. Those high in openness harbor a thirst for curiosity and novelty, driving them to seek insights from others. As a consequence, they accumulate greater expertise by actively seeking advice (Esmaeelinezhad and Afrazeh, 2018). Openness to experience signifies the depth and intricacy of an individual's cognitive and experiential realm. Those with elevated scores on this trait are recognized for their creativity, intellectual curiosity about both external and internal domains, willingness to entertain diverse ideas, independent decision-making, and a disposition towards non-traditional and non-conservative views (Costa and McCrae, 1992; Yumhi, 2024). Bandura (1997) contends that within the internal framework of social cognitive theory, human behavior remains in a continual interplay with behavior (KSB), personal factors (BFP), and environment (KCC), each mutually influencing the other. Consequently, it is anticipated that a knowledge-centered culture will particularly foster knowledge dissemination among individuals with high openness scores, attributable to their inquisitive, less

conventional nature and their propensity for expertise development through external guidance. Accordingly, this study advances the fifth hypothesis:

H_5: *Openness to experience positively moderates the relationship between knowledge-centered culture and knowledge-sharing behavior.*

2.10 The Moderator Role of Neuroticism

Neuroticism, as characterized by Esmaeelinezhad and Afrazeh (2018), encompasses a constellation of adverse enduring traits, including unease, anxiety, and melancholy. Nevertheless, Lotfi et al. (2016) counter this notion, contending that individuals scoring high on neuroticism may exhibit limited engagement and cooperation in knowledge sharing endeavors within teams. Gupta (2008) and Lotfi, Muktar, and Ologbo (2016) also highlight the volatile nature of this personality trait, observing that those with elevated neuroticism scores are prone to expressing emotions such as despondency, bewilderment, fear, and emotional instability within social contexts. Lotfi, Muktar, and Ologbo (2016) further underscore the propensity of neurotic personalities to manifest negative emotions, thereby impinging upon their interactions with others. Similarly, Fragkos and Frangos (2013) posit that neurotic individuals tend to experience heightened anxiety over unattained success, detrimentally affecting their work performance. Barnes, Mahar, Wong, and Rune (2017) suggest that individuals with pronounced neurotic traits are marked by self-doubt and apprehension, leading to a reduced willingness to engage in virtual discourse. Bandura's (1997) assertion within the internal framework of social cognitive learning theory highlights the continuous interplay between behavior (KSB), personal factors (BFP), and environment (KCC), encapsulating the concept of reciprocal determinism. Accordingly, this study contends that in the scenario where a knowledge-sharing culture is extended to individuals scoring high on the neuroticism trait, their interpersonal inconsistency poses hindrances to knowledge-sharing activities in the workplace. Given the prevalence of emotions like depression, insecurity, fear, and confusion, the willingness to share knowledge becomes negatively influenced. Hence, the study advances its sixth hypothesis as follows:

H_6: *Neuroticism negatively moderates the relationship between knowledge-centered culture and knowledge-sharing behavior.*

3. Methodology

Fig. 1 presents the structure of the proposed study.

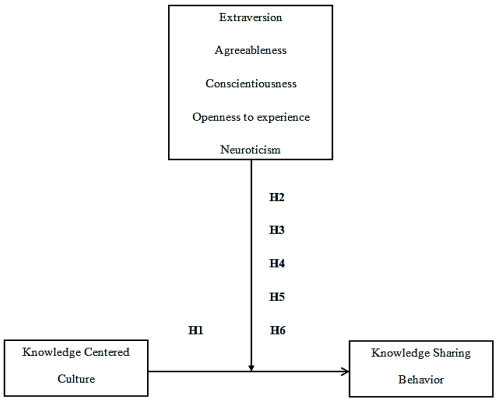

Fig. 1. The structure of the proposed study

3.1 Research Design, Population, and Sample Size

The research design serves as a blueprint for the study's methods and procedures, encompassing data collection and analysis strategies. The study's research design, a comprehensive roadmap guiding data collection and analysis, emphasizes a quantitative survey approach. This choice is particularly suitable for investigating knowledge sharing behavior by analyzing individual and organizational attributes. This study adopts a quantitative approach, specifically employing a survey research design. The study's target population comprises academic staff from six private universities accredited by NBEAC, located in Lahore. The population consisted of approximately 309 individuals. The sample size, determined through the Krejcie and Morgan (1970) formula, was 173. However, to account for potential sample attrition, 240 questionnaires were distributed. This consideration is crucial as attrition can lead to a reduction in sample size due to participant withdrawals during data collection phases.

3.2 Methodology and Instrumentation

The unit of analysis in this study was the individual academic staff members of private higher education institutes. The study utilized a self-administered questionnaire as the data collection tool due to its cost-effectiveness, ease of analysis, and efficient

handling of a larger number of respondents within a limited time. Close-ended questions were employed to allow quick response choices and facilitate data codification. The instrument used Likert scales, a widely accepted measurement tool in quantitative research. The questionnaire comprised three sections: one for assessing knowledge-centered culture (adapted from Quinn, 1988), another for measuring personality traits (44-item inventory adapted from John and Srivastava, 1999), and the third for gauging knowledge sharing behavior (based on Casimir, Lee, and Mark Loon, 2012). Likert scales with 5-point options were employed for all sections, ranging from strongly disagree to strongly agree. The utilization of self-administered questionnaires allowed for efficient data collection without the potential influence of observer effects that could arise from interviews. Control variables such as gender, age, education, employee tenure, and educational institute were incorporated to account for potential confounding factors in the analysis. These control variables were selected based on their relevance and alignment with a similar study by Bibi and Ali (2017) in the public sector academic setting. This study employed a stratified random sampling technique, a probability-based approach. The population was divided into distinct groups, or strata, based on shared attributes among subjects within each group. The strata were established considering private universities in Lahore accredited by NBEAC, totaling six: LUMS, LSE, UMT, UOL, FC, and FAST. Proportionate stratification was then conducted, assigning different proportions to each university based on their faculty size and the total target population. For instance, LUMS represented 17.47%, LSE 13.91%, UMT 18.77%, UOL 32.03%, FAST 11%, and FC 6.79% of the total. This approach ensured that each university was represented proportionally. To address potential attrition, 240 questionnaires were distributed to achieve the required sample size of 173, considering the possibility of participant dropout during data collection stages. Consequently, the stratified sampling resulted in specific sample sizes for each university: 42 from LUMS, 33 from LSE, 45 from UMT, 77 from UOL, 27 from FAST, and 16 from FC.

Prior to hypothesis testing, the reliability of the data collection tool was evaluated using Partial Least Squares (PLS), standardized factor loading, and Cronbach alpha. PLS, recognized as a modern method for reliability assessment compared to Cronbach alpha, was employed. The subsequent step involved conducting Partial Least Squares Structural Equation Modeling (PLS SEM) to examine the hypotheses and relationships among variables. PLS analysis was chosen based on its suitability for models encompassing numerous constructs and items, particularly pertinent to this study's complexity and small sample size. Smart PLS 3.0 software facilitated the analysis, comprising two stages: evaluating the measurement model and the structural model. The measurement model assessment encompassed examining composite reliability, factor loading, Cronbach alpha, as well as convergent and discriminant validity. Moving to the structural model, the PLS SEM analysis involved scrutinizing R-squared values, effect size, and predictive relevance values. Path coefficients, p-values, and t-values were assessed for each causal relationship within the model. This culminated in the examination of hypothesized relationships.

4. Results and findings

This study collected data from academic staff within accredited private universities situated in Lahore. The research surveys were personally administered, accompanied by clear instructions to facilitate the accurate recording of responses. Adhering to strategies outlined by Sekaran and Bougie (2010), efforts to boost response rates included reminders through visits, phone calls, and SMS. From the 240 administered questionnaires, 187 were received, yielding a response rate of 77.9% (as indicated in Table 4.1). Subsequently, after eliminating 3 questionnaires due to missing values, the precise analysis was conducted with 184 questionnaires, resulting in a 76.6% response rate. This response rate aligns with comparable studies; for instance, Bibi and Ali (2017) achieved a 61% response rate in the education sector, and Esmaeelinezhad and Afrazeh (2018) obtained a 73.6% response rate in their study linking personality traits with knowledge management dimensions.

To gauge normality, Skewness and Kurtosis were employed to identify shape and deviations from normality (Hair Jr., Black, Babin, and Anderson, 2010). While PLS-SEM doesn't hinge on data normality due to its non-parametric nature, Hair Jr. et al. (2013) underscored the importance of avoiding extreme non-normality to prevent issues in parameter evaluation and inflated standard errors during bootstrapping. Employing SPSS 23, this study verified normality by finding that absolute scores of Skewness and Kurtosis for items remained within the desirable thresholds, where Skewness values ranged from -0.1 to +0.1 and Kurtosis values were within -0.2 to +0.2 (West, Finch, and Curran, 1995).

In line with the insights of Hair and C. M. (2011), assessing inter-correlations among independent variables through multicollinearity is a crucial practice. The Variance Inflation Factor (VIF) values for the independent variables in this study, ranging from 1.216 to 2.507, consistently remained below the critical threshold of 10. Correspondingly, tolerance values for these variables spanned from 0.4 to 0.8, well below the threshold value of 0.10. Per Hair and C. M.'s guidance (2011), VIF values exceeding 10 and tolerance values below 0.10 indicate significant multi-collinearity among independent variables. However, as evidenced by Table 4.2, the VIF and tolerance values presented herein do not surpass the critical thresholds, displaying the absence of multi-collinearity in the model.

4.1 Respondents Overview

In terms of gender distribution, the study involved 63% male and 37% female respondents. Academic qualifications showcased that 4.9% held a bachelor’s degree, 52.7% possessed a Master's degree, and 42.4% were PhD degree holders. The participants spanned across four age groups: 29.3% fell within the 21 to 30 years range, 45.1% ranged from 31 to 40 years, 55% were in the 41 to 50 years range, and the remaining 5% were aged 50 years and above. The professional experience of

participants was also highlighted: 44.6% had served for 1 to 3 years, 31.5% for 4 to 6 years, 17.4% for 7 to 10 years, and 6.5% for over 10 years. These descriptive results provide insights into the diverse composition of the respondents in terms of gender, academic qualifications, age, and years of service.

The reliability statistics show the following results. The items under the Agreeableness construct are labeled as AG10, AG12, AG13, AG15, and AG16. The factor loadings represent the strength of the relationship between each item and the underlying construct (Agreeableness). For example, AG10 has a loading of 0.771, indicating a strong association with Agreeableness. The AVE value of 0.844 indicates that 84.4% of the variance in the items is explained by the Agreeableness construct. The CR value of 0.768 suggests good internal consistency reliability for this construct. Similarly, Conscientiousness construct has items labeled as CN18, CN20, CN24, and CN25. Factor loadings such as 0.697 for CN18 indicate a solid relationship between the items and Conscientiousness. AVE of 0.800 and CR of 0.693 show good convergent validity and reliability. The construct (Extraversion) includes items EX1, EX3, EX4, and EX8. Factor loadings like 0.739 for EX1 indicate a substantial link between the items and Extraversion. AVE of 0.803 and CR of 0.701 indicate good validity and reliability. Neuroticism is represented by items NU38, NU41, and NU43. Factor loadings, e.g., 0.751 for NU38, show the connection between the items and Neuroticism. AVE of 0.821 and CR of 0.683 indicate acceptable convergent validity and reliability. The Openness construct contains items OP27, OP31, OP33, and OP36. Factor loadings like 0.708 for OP27 demonstrate the relationship between items and Openness. AVE of 0.772 and CR of 0.694 indicate satisfactory convergent validity and reliability. KCC construct involves items KCC46 to KCC53. Factor loadings, e.g., 0.650 for KCC46, indicate the link between items and KCC. AVE of 0.844 and CR of 0.771 suggest good validity and reliability. KSB construct includes items KSB65 to KSB69. Factor loadings, e.g., 0.648 for KSB65, show the connection between items and KSB. AVE of 0.892 and CR of 0.863 indicate solid convergent validity and reliability.

In a nutshell, the factor loadings generally indicate that the items are well associated with their respective constructs. The AVE values suggest that a significant portion of the variance in each construct is explained by its items. The CR values and Cronbach's alpha coefficients indicate that the constructs exhibit good internal consistency. Overall, these results provide confidence in the reliability and validity of the measurement model (See Table 1).

Table 1
The summary of the factor loading and AVE

Factor	Code	Loading	AVE	CR	Alpha
Agreeableness	AG10	0.771	0.521	0.844	0.768
	AG12	0.625			
	AG13	0.708			
	AG15	0.737			
	AG16	0.758			
Conscientiousness	CN18	0.697	0.504	0.800	0.693
	CN20	0.847			
	CN24	0.589			
	CN25	0.684			
Extraversion	EX1	0.739	0.505	0.803	0.701
	EX3	0.757			
	EX4	0.705			
	EX8	0.636			
Neuroticism	NU38	0.751	0.606	0.821	0.683
	NU41	0.860			
	NU43	0.716			
Openness	OP27	0.708	0.55	0.772	0.694
	OP31	0.647			
	OP33	0.657			
	OP36	0.697			
Knowledge Center Culture (KCC)	KCC46	0.650	0.520	0.844	0.771
	KCC47	0.696			
	KCC48	0.653			
	KCC49	0.692			
	KCC50	0.785			
	KCC51	0.793			
	KCC52	0.732			
	KCC53	0.694			
Knowledge Sharing Behavior (KCB)	KCB65	0.648	0.509	0.892	0.863
	KCB66	0.726			
	KCB67	0.740			
	KCB68	0.753			
	KCB69	0.736			

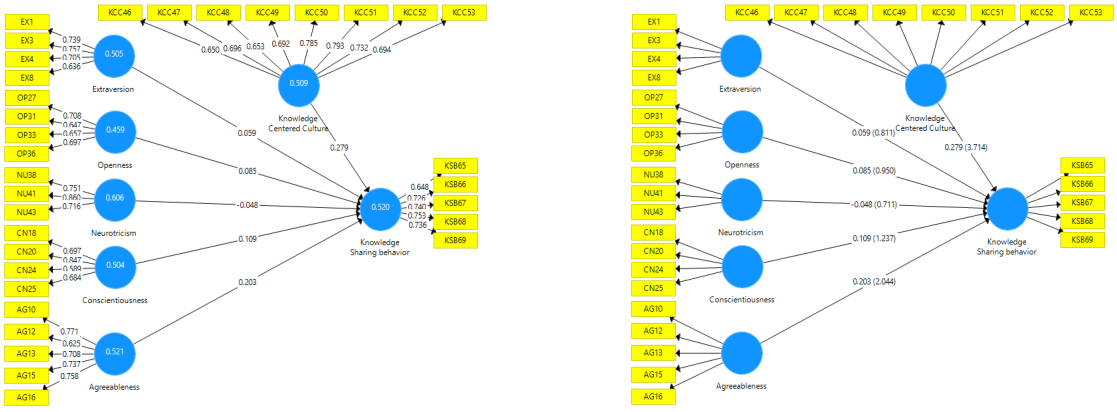

Fig. 2. The preliminary results of the effects of different factors

4.2 Moderation Analysis

According to Esposito Vinzi et al. (2010), the moderation test in this study followed a systematic approach. Initially, the primary effects of predictor variables on the criterion variable were assessed. Subsequently, the influence of the moderator on the relationship between predictor variables and the criterion variable was evaluated. Finally, interaction conditions were introduced, involving the multiplication of predictor and moderating constructs. As per Hair Jr. et al. (2013), the moderator effect is considered valid when these interaction terms are statistically significant. The moderating model, depicted in Figs. 3 (a-c) aimed to determine if personality traits interact with knowledge-centered culture to enhance knowledge sharing behavior. In Fig. 3a, extraversion as a moderator positively enhanced the relationship between knowledge-centered culture and knowledge sharing behavior ($\beta = 0.25$; $t = 2.419$; $p < 0.05$). Similarly, Fig. 3b revealed that conscientiousness as a moderator positively influenced the same relationship ($\beta = 0.221$; $t = 2.419$; $p < 0.05$). Conversely, Fig. 3c indicated that openness as a moderator resulted in a negative path coefficient, suggesting that individuals with low openness, interacting with knowledge-centered culture, promote knowledge sharing behavior ($\beta = -0.31$; $t = 4.5$; $p < 0.05$), while high openness reduced the moderating effect between knowledge-centered culture and knowledge sharing behavior. Table 2 provides path coefficients and significance levels for the entire model. Knowledge-centered culture positively impacted knowledge sharing behavior ($\beta = 0.279$, $p < 0.05$, $t = 3.714$). Extraversion and conscientiousness both significantly and positively moderated the relationship ($\beta = 0.25$, $p < 0.05$, $t = 2.419$; $\beta = 0.22$, $p < 0.01$, $t = 1.98$). Openness exhibited a negative direction in interaction with knowledge-centered culture ($\beta = -0.311$, $p < 0.05$, $t = 4.574$), indicating that low openness individuals, influenced by knowledge-centered culture, fostered knowledge sharing behavior. Agreeableness and neuroticism did not yield statistically significant results, though their influence was reflected by path coefficients ($\beta = 0.169$, $p > 0.05$, $t = 1.25$; $\beta = 0.181$, $p > 0.05$, $t = 1.264$).

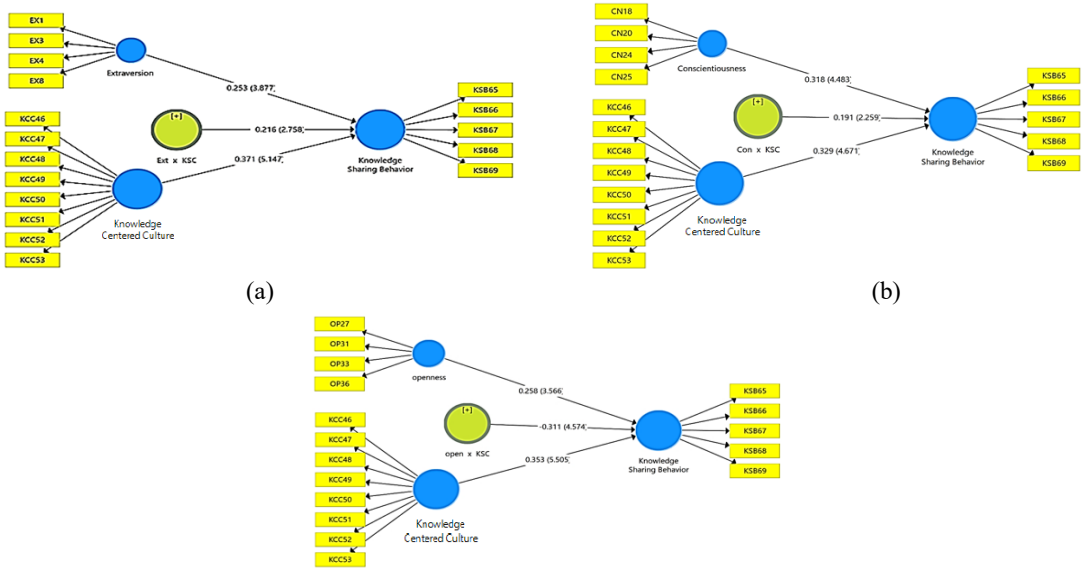

Fig. 3. The summary of the results of the moderating effects

The following summarizes the SEM results.

4.3 Hypothesis H_1 (KCC → KSB):

The Beta value of 0.279 indicates a positive relationship between Knowledge-Centered Culture (KCC) and Knowledge Sharing Behavior (KSB). The Standard Error (S.E) of 0.071 reflects the precision of the Beta estimate. The p-value of 0.000* is less than the significance level (e.g., 0.05), indicating that the relationship is statistically significant. The T-Statistic of 3.714 is calculated by dividing the Beta value by the S.E, and it confirms that the relationship is significant. The Decision "Accepted" means that the hypothesis is supported by the data. The R Square value of 0.392 represents the amount of variance in Knowledge Sharing Behavior (KSB) that can be explained by Knowledge-Centered Culture (KCC).

Hypothesis H_2 (Ext × KSC → KSB):

The Beta value of 0.253 suggests a positive relationship between the interaction of Extraversion (Ext) and Knowledge-Centered Culture (KSC) with Knowledge Sharing Behavior (KSB). The S.E of 0.089 indicates the precision of the estimate. The p-value of 0.008** is less than 0.01, showing that the relationship is statistically significant. The T-Statistic of 2.419 confirms the significance of the relationship. The Decision "Accepted" indicates that this hypothesis is supported.

Hypothesis H_3 (AG × KSC → KSB):

The Beta value of 0.169 suggests a positive relationship between the interaction of Agreeableness (AG) and Knowledge-Centered Culture (KSC) with Knowledge Sharing Behavior (KSB). The S.E of 0.135 reflects the precision of the estimate. The p-value of 0.105 is greater than the typical significance level, indicating that the relationship is not statistically significant. The T-Statistic of 1.255 is not strong enough to confirm significance. The Decision "Not Accepted" means that this hypothesis is not supported.

Hypothesis H_4 (CN × KSC → KSB):

The Beta value of 0.221 indicates a positive relationship between the interaction of Conscientiousness (CN) and Knowledge-Centered Culture (KSC) with Knowledge Sharing Behavior (KSB). The S.E of 0.096 shows the precision of the estimate. The p-value of 0.024*** is less than 0.05, indicating statistical significance. The T-Statistic of 1.988 confirms the significance of the relationship. The Decision "Accepted" means that this hypothesis is supported.

Hypothesis H_5 (OP × KSC → KSB):

The Beta value of -0.311 suggests a negative relationship between the interaction of Openness (OP) and Knowledge-Centered Culture (KSC) with Knowledge Sharing Behavior (KSB). The S.E of 0.068 reflects the precision of the estimate. The p-value of 0.000* indicates statistical significance. The T-Statistic of 4.574 confirms the significance of the relationship. The Decision "Accepted" means that this hypothesis is supported.

Hypothesis H_6 (NU × KSC → KSB):

The Beta value of 0.181 suggests a positive relationship between the interaction of Neuroticism (NU) and Knowledge-Centered Culture (KSC) with Knowledge Sharing Behavior (KSB). The S.E of 0.143 reflects the precision of the estimate. The p-value of 0.103 is greater than the significance level, indicating that the relationship is not statistically significant. The T-Statistic of 1.264 is not strong enough to confirm significance. The Decision "Not Accepted" means that this hypothesis is not supported.

Table 2
The summary of testing the hypotheses

Hypothesis	Beta value	S.E	P-value	T-Stat	Decision	R Square
H_1: KCC→ KSB	0.279	0.071	0.000*	3.714	Accepted	0.392
H_2: Ext × KSC → KSB	0.253	0.089	0.008**	2.419	Accepted	
H_3: AG × KSC → KSB	0.169	0.135	0.105	1.255	Not Accepted	
H_4: CN × KSC → KSB	0.221	0.096	0.024***	1.988	Accepted	
H_5: OP × KSC → KSB	-0.311	0.068	0.000*	4.574	Accepted	
H_6: NU × KSC → KSB	0.181	0.143	0.103	1.264	Not Accepted	

5. Conclusion

The research delineates a noteworthy correlation between a knowledge-centered culture and the propensity for knowledge sharing within an organization, thus advocating for the integration of a knowledge-centered ethos by entities aiming to foster such sharing dynamics. Given that the data collection focused on private institutions purportedly endowed with a pre-existing knowledge-centered culture, as posited by Muqadas et al. (2016), the statistical analyses underscored a positive and substantial association. Notably, the findings indicate that individuals with elevated levels of extraversion among academicians serve as

significant moderators, augmenting the linkage between a knowledge-centered culture and knowledge sharing behavior. Consequently, private institutions exhibit a proclivity towards extroverted individuals, given their communicative and sociable nature, thereby enhancing knowledge dissemination within the organizational milieu. Similarly, the study underscores the moderating role of conscientiousness, with academicians demonstrating heightened conscientious traits facilitating a positive and significant relationship between organizations. Consequently, the study advocates for the preference of conscientious individuals within private institutions, citing their reputation for trustworthiness and diligent work ethic, as highlighted by Pawlowska, Westerman, Bergman, and Huelsman (2014).

6. Limitation and Future Research

The study's outcomes were derived from a cross-sectional analysis due to the data being collected at a single time point. Future research endeavors could enhance the generalizability of findings by employing longitudinal designs to scrutinize the moderation effects among variables. Furthermore, it is imperative for subsequent studies to broaden the scope beyond the confines of the private education sector of Pakistan, potentially encompassing the public education domain. To validate the current findings, forthcoming investigations could adopt alternative data collection methodologies, such as interviews and focus groups. Moreover, there is a need for expansion in the exploration of knowledge sharing behavior (KSB) across diverse sectors, delving into varied types of knowledge, including tacit and explicit knowledge, within sectors such as Information Technology and Fast-Moving Consumer Goods (FMCG). Additionally, future researchers are encouraged to examine the moderating influence of affect-based trust, as an enduring characteristic, in the nexus between knowledge-centered culture and knowledge sharing behavior. Furthermore, it would be beneficial for subsequent studies to incorporate variables at multiple levels, including individual, group, organizational, and technological dimensions, to provide a comprehensive understanding of KSB dynamics. Moreover, there is potential for practical application in diverse cultural contexts, such as Malaysia, Indonesia, Egypt, and Turkey, characterized by a shared Muslim heritage and a collectivist Asian culture. Testing the results within these contexts would contribute to the broader applicability and robustness of the findings.

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