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Student Academic Performance: The Role of Antecedents, Mediation, and Moderation

Dea Salma Safira[1,2], ***Dian Ekowati**[1,2]

[1]Department of Management, Faculty of Economics and Business, Universitas Airlangga, Indonesia
[2]Center for Environmental, Social, and Governance Studies (CESGS), Universitas Airlangga, Surabaya, Indonesia

Correspondence*:
Address: Jl. Airlangga 4, Surabaya, Indonesia 60286 | e-mail: d.ekowati@feb.unair.ac.id

Abstract

Objective: This study aims to investigate students' academic performance by examining the role of knowledge hiding (KHi) as a mediating variable and using three antecedents as dependent variables. Additionally, it explores the moderating role of academic self-efficacy on KHi behavior and students' academic performance. The research objectives should be expressed clearly and concisely.
Design/Methods/Approach: Eleven hypotheses were analyzed using structural equation modeling (SEM). Data were collected through a primary survey based on structured questionnaires, with a sample size of 252 undergraduate students from various universities.
Findings: Performance motivation and sense of relatedness positively affect academic performance, while territoriality of knowledge negatively affects academic performance. Territoriality of knowledge and sense of relatedness increase KHi. Meanwhile, performance motivation doesn't notably influence it. KHi partially mediates the impact of knowledge territoriality and fully mediates the effect of relatedness on academic performance. Academic self-efficacy doesn't significantly moderate the relationship between KHi and academic performance.
Originality/Value: The study was conducted among students, bringing an academic perspective into the KHi literature. This study contributes new insights from a developing country to human resource management by examining KHi and academic performance within higher education—a previously unexplored context. Conducted among students, it enriches the KHi literature with valuable academic perspectives.
Practical/Policy implication: This study presents exciting insights for administrators and policymakers in academia. By establishing a model, the research highlights that the phenomenon of KHi exists among students, which may or may not have immediately apparent negative effects, especially when compared to an organizational context. However, it certainly does not bode well for their future in the workforce, where indulging in knowledge hiding within teams or groups as employees can be detrimental.

Keywords: Knowledge hiding, Social desirability bias, Theory of Reasoned Action, Territoriality, Academic research

JEL Classification: I230, I260, N3

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1. Introduction

Higher education plays a crucial role in shaping the future of society by influencing community welfare, economy, and politics. Education is pivotal in national development; a high-quality education system will produce good individuals (Solas & Sutton, 2018). Despite this, there are significant challenges in higher education, with the current educational landscape needing to fully meet societal expectations (Kalangi et al., 2021). The low quality of graduates and unresolved educational issues mark this phenomenon. Therefore, stakeholders must improve the academic performance of its higher education institutions. Academic performance (ACP) impacts organizational performance when human resources are of poor quality (Armstrong & Taylor, 2020). ACP often refers to a student's ability to achieve academic or educational goals. Students with knowledge also have discretion over its transfer and will often use this discretion to maximize their outcomes, such as ACP (Garg et al., 2021). Singh et al. (2016) also argue that students' ACP directly impacts a country's socioeconomic development. Students' academic performance has a significant impact on the economic growth of a nation. Acquiring relevant knowledge and skills is crucial for enhancing students' academic success (Jain et al., 2016)

This phenomenon, student academic performance, becomes crucial, especially in higher education institutions, as they primarily focus on creating and disseminating knowledge (Laksmini, 2016). Academic performance provides valuable information for educational authorities, offering opportunities for decision-making and helping students achieve outstanding performance in their studies (Asiah et al., 2019). Overall, positive student changes are considered academic performance (Camelo & Elliott, 2019). Academic performance generally refers to the ability of students to achieve academic or educational goals. The Cambridge University Reporter defines academic performance in terms of examination performance (Alfordy & Othman, 2021), which is characterized by overall performance each semester, culminating in GPA. Several studies use the cumulative grade point average (GPA) as a parameter because it has substantial and significant value for future education and career mobility (Asiah et al., 2019; Kavipriya, 2016). GPA is widely used to indicate academic performance because it is an objective measure with good internal reliability and temporal stability (Miguéis et al., 2018; Richardson et al., 2012) In turn, ACP and motivation are influenced by the feedback individuals receive in the learning process (Denton, 2014; Paloș et al., 2019). Therefore, college students should prioritize performance improvement (Alshalawi, 2022) to enhance learning and instruction; student engagement is critical. Hence, encouraging student participation in educational institutions is vital (Groccia, 2018).

The phenomenon of student academic performance (ACP) can be examined through various theoretical frameworks, including the theory of reasoned action (TRA) and the social exchange theory (SET). According to TRA, individual behavior is driven by behavioral intentions, which are shaped by attitudes toward the behavior and subjective norms (Fishbein & Ajzen, 1975) . When applied to ACP, TRA indicates that students' academic behaviors are influenced by their attitudes toward academic success and the expectations of influential figures. Similarly, SET asserts that social behavior is the result of an exchange process aimed at maximizing benefits and minimizing costs (Blau, 1964). In terms of ACP, this means that students engage in academic activities when they believe that the benefits (e.g., high GPA, career opportunities) outweigh the costs (e.g., time, effort).

While TRA and SET offer valuable insights into the motivational and behavioral dimensions of ACP, they do not fully address the intrinsic motivational factors emphasized by other theories like self-determination theory (SDT) and expectancy theory. SDT emphasizes intrinsic motivation and the fundamental psychological needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). In contrast, expectancy theory suggests that individuals are motivated to act when they anticipate their actions will lead to desired outcomes (Vroom et al., 2015). This theoretical gap highlights the need for a more comprehensive framework that integrates both extrinsic and intrinsic motivational factors to more effectively understand and improve ACP.

Despite extensive research on student academic performance, inconsistencies in findings have persisted, particularly over the last five years. Different studies have emphasized various factors such as feedback, motivation, and student engagement (Denton, 2014; Groccia, 2018; Paloș et al., 2019), but there is no consensus on their relative importance or how they interact. For example, some studies highlight GPA as a crucial objective measure of ACP (Miguéis et al., 2018), while others focus on broader educational objectives and socioeconomic impacts (Jain et al., 2016). These inconsistencies highlight the need for further research to reconcile these findings and clarify the determinants and outcomes of ACP. Specifically, empirical studies must systematically examine how different motivational and behavioral factors interact to influence ACP, and how these interactions vary across diverse educational contexts.

Furthermore, the World Bank's data show that tertiary education graduates are more employable and productive, earn higher wages, and cope better with economic shocks (World Bank, 2024). UNESCO (2024) also emphasizes the importance of higher education in equipping students with the necessary skills to meet labor market demands. This makes student academic performance a guarantee of good human resource quality (HR), not only in higher education but also when they become company employees (Sackett & Lievens, 2008). GPA as a parameter has substantial and significant value for future education and career mobility (Asiah et al., 2019). When organizations want to guarantee their HR quality, GPA often becomes an initial screening (Kuncel & Hezlett, 2007). In the academic context, it is assumed that access to knowledge gives students bargaining power while others depend on them for access to that knowledge (Evans et al., 2015a). This allows students to obtain desired resources or support from others, enhancing

their performance. Ultimately, those with knowledge ownership can develop their information networks and create disproportionate value (Khoreva & Wechtler, 2020; Lepak et al., 2003) such as by perceiving their peers as threats and refraining from sharing knowledge and engaging in knowledge hiding

Students often resort to various strategies to improve or maintain their expected academic performance. One such strategy is knowledge hiding, where students withhold the knowledge they possess, using it as a competitive advantage to enhance their academic performance (Garg et al., 2021). However, it is concerning to note that the culture of knowledge sharing in higher education is limited. Knowledge-sharing behavior in higher education institutions is lower compared to companies. This is attributed to the high expectations placed on a few individuals in higher education institutions to achieve quality academic results. The phenomenon of knowledge hiding among students today may or may not have adverse effects, but it certainly does not bode well when these students enter the workforce and continue to practice knowledge hiding within teams or groups as future employees (Garg et al., 2021).

This variable is of interest to policymakers in educational institutions, i.e., higher education institutions, to create a more conducive and comfortable teaching and learning environment (Garg et al., 2021). Concerned about knowledge hiding in the learning process in higher education, this study examines and looks further into its effect on academic performance. The current study delves deeper into knowledge hiding, including three antecedent variables that lead to knowledge hiding: performance motivation, territoriality of knowledge, and sense of relatedness.

This study takes a traditional approach, commencing with a comprehensive literature review and then formulating a series of hypotheses. These hypotheses have been rigorously tested using primary data collected through structured survey questionnaires and analyzed using structural equation modeling (SEM). The research findings are then contextualized within the existing literature, leading to the formulation of conclusions and recommendations. The study concludes with a reflection on its limitations and suggestions for future research, thereby making a unique contribution to the field.

In general, this study makes significant theoretical and empirical contributions to the field of student academic performance (ACP), relevant to both scholars and practitioners. Theoretically, it integrates motivational theories, combining the theory of reasoned action and social exchange theory with self-determination theory and expectancy theory. This comprehensive framework highlights the interplay between extrinsic and intrinsic motivations, advancing our understanding of ACP's motivational dynamics. Empirically, the research addresses inconsistencies in previous ACP studies by systematically examining factors like feedback, motivation, and engagement using structural equation modeling (SEM). The findings clarify how these factors interact across diverse contexts, crucial for developing targeted interventions to enhance student performance. Practically, the study offers insights for policymakers and institutions to improve academic performance by balancing extrinsic rewards with intrinsic support. It provides strategies to mitigate knowledge hiding behaviors by understanding performance motivation, territoriality, and sense of relatedness. This leads to a more collaborative educational environment, enhancing outcomes and better preparing students for the workforce. By bridging theoretical and empirical gaps, this study contributes to academic literature and offers practical recommendations for improving higher education quality. By addressing both theoretical and empirical gaps, this study not only contributes to the academic literature but also provides practical recommendations that can help educational stakeholders improve the quality of higher education. This dual focus ensures that the findings are significant and impactful, promoting both academic advancement and practical implementation.

2. Literature Review and Hypotheses Development

2.1. Theoretical Background

From a theoretical standpoint, this study seeks to illuminate a topic that has yet to be extensively covered, anchoring its analysis in the theory of reasoned action (TRA) and social exchange theory (SET). TRA (Fishbein & Ajzen, 1975; Garg et al., 2021) posits that an individual's behavioral intentions are influenced by their subjective norms and attitudes. Subjective norms suggest that social influence or recommendations can motivate an individual to engage in a specific behavior (Ajzen, 2019; Garg et al., 2021), while attitudes represent an individual's evaluation of the behavior's potential positive and negative outcomes. This evaluation influences the individual's decision to act or refrain from acting (Ajzen, 2019; Garg et al., 2021). Leveraging TRA and building on the research of Panand Zhang (2014), this study not only investigates how a sense of relatedness, performance motivation, and territoriality influence students' propensity to engage in knowledge hiding behavior but also provides practical insights for educators and organizational leaders.

TRA helps explain the relationships between variables in this study's framework by illustrating how attitudes and subjective norms shape students' intentions and behaviors regarding knowledge hiding. According to TRA, the sense of relatedness influences students' attitudes toward knowledge hiding (Sheppard et al., 1988). If students feel a strong connection to their peers, their positive attitudes toward collaborative behavior will reduce the likelihood of engaging in knowledge hiding. TRA suggests that students' performance motivation will affect their attitudes toward knowledge sharing and hiding. Subjective norms around territoriality will influence how students perceive the ownership of knowledge (Ajzen, 1985). By applying TRA, the study can predict that students' intentions to hide knowledge are shaped by their attitudes toward relatedness, performance motivation, territoriality, and subjective norms within their academic environment.

Related to previous research using TRA, Connelly et al. (2012) found that employees' attitudes toward knowledge sharing and the subjective norms in their workplace significantly influenced their intentions to hide knowledge. Bock et al. (2005) highlighted the impact of subjective norms and attitudes on employees' knowledge-sharing behaviors, reinforcing the applicability of TRA in understanding knowledge-related behaviors. Pan and Zhang's (2014) findings indicated that students' attitudes toward knowledge hiding, influenced by their academic environment and subjective norms, played a crucial role in their intention to hide knowledge.

Social exchange begins when someone within an organization, such as a supervisor or a colleague, interacts with another individual in a manner that can be perceived as positive or negative (Eisenberger et al., 2004). According to social exchange theory, individuals are likely to respond to positive actions with similar positive behaviors and/or a reduction in negative behaviors. SET assumes that human interactions are driven by a subjective analysis of costs and benefits, leading individuals to repeat actions that have previously resulted in rewards. The frequency of these rewarded behaviors increases their likelihood of being repeated in the future (Homans, 1958). Furthermore, social exchange theory posits that social relationships are built on the expectation that acts of kindness and goodwill will be reciprocated, fostering trust within those relationships (Blau, 2017).

SET can explain the relationships between variables in this study's framework by emphasizing the reciprocal nature of social interactions and the perceived costs and benefits of engaging in specific behaviors. SET posits that individuals who feel a strong sense of relatedness and receive positive social interactions from their peers are more likely to engage in behaviors that reciprocate this goodwill, such as sharing knowledge (Zhang & Liu, 2022). According to SET, students with high performance motivation may perceive that the costs of sharing knowledge outweigh the benefits, especially if they believe that withholding knowledge will give them a competitive edge. This cost-benefit analysis can lead to knowledge hiding as students aim to maximize their performance outcomes (Wu et al., 2023). SET explains territorial behaviors are influenced by the perceived benefits of maintaining control over knowledge and the potential costs of losing this control. Students who feel a strong sense of ownership over their knowledge and perceive high benefits from keeping it exclusive are likely to engage in knowledge hiding to protect their perceived territory (Wu et al., 2023). By applying SET, the study can predict that students' knowledge hiding behaviors are influenced by their perceptions of social exchanges and the anticipated costs and benefits of these behaviors in their academic environment. Previous research has found that students tend to hide their knowledge if they perceive that it will not be reciprocated with benefits or if they feel that their social relationships will be negatively impacted by sharing their knowledge (Bari et al., 2019; Černe et al., 2014; Xu et al., 2023). This is consistent with SET, which posits that individuals engage in behaviors that maintain or enhance their social relationships and avoid behaviors that damage these relationships

2.2. Hypothesis Development

2.2.1. Performance Motivation and Academic Performance

Performance motivation is oriented toward academic performance driven by a student's desire to outperform their peers, as explained by Dweck and Leggett (1988 cited in Garg et al., 2021). Performance motivation can lead to more extrinsic goals related to maintaining good grades and demonstrating relative competence than others (Garg et al., 2021; Haynes et al., 2008). This means that students with high-performance motivation will focus on individual performance and prioritize their interests, leading them to view other students as competitors or targets for competition (Garg et al., 2021).

Better academic performance is associated with highly conscientious or highly motivated students (Kuśnierz et al., 2020). When discussing the causes of poor academic performance and the concept of motivation, Usán et al. (2019) explain that students with good academic performance and a positive self-concept related to intrinsic motivation in school activities have a goal orientation focused on tasks. Dikaya et al. (2019) discuss how academic motivation positively impacts students' academic performance and Trigueros et al. (2020) show how academic motivation predicts academic performance positively. Students have shown a positive relationship between motivations for learning and academic performance (Cazan, 2015; Trigueros et al., 2020).

H1: Performance motivation has a significant positive effect on academic performance

2.2.2 Territoriality of Knowledge and Academic Performance

Territoriality is generally considered a way for various animal species to mark and protect their territory and behaviors aimed at maintaining space for individual animals, establishing habitat, dominance structures, competition between species, maintaining safety, and also localizing species waste (Edney, 1974; Ekowati, 2019; Lyman & Scott, 1967, 2017). Territoriality also refers to the human tendency to establish permanent or temporary control over something (Chawla & Gupta, 2020; Peng, 2013). Territoriality is similar to socio-behavioral representation (such as "it is mine, not yours") that represents psychological ownership of knowledge, which is a cognitive internal phenomenon within study groups (Brown et al., 2005; Singh, 2019). Territoriality can lead to improved performance and retention if individuals believe that, by protecting their territory, they are doing what is right and that the characteristics of the task depend more on individual performance and less on team contribution (Bhattacharya & Sharma, 2019).

Individuals will experience territorial feelings toward various relevant aspects of their lives (Brown & Robinson, 2007). Territorial feelings within individuals will lead to a cycle of distrust toward others, which can result in knowledge hiding, leading to decreased performance for those in focus. Brown et al. (2005) and Singh (2019) note that in organizations where territoriality prevails and exists everywhere, colleagues may not want to explore specific areas, take on new tasks, or work with certain colleagues out of fear of violating others' territories.

Moreover, territorial feelings can lead colleagues to be preoccupied with communicating and maintaining claims of ownership over knowledge, skills, expertise, etc. This preoccupation can divert their focus from performance and achieving organizational goals (Brown et al., 2005; Singh, 2019). The psychological ownership and territorial behaviors that result can isolate coworkers from each other, hindering the development of helping, collaborative, and cooperative relationships. This isolation has a negative impact on their performance, underscoring the need for a more balanced focus on individual and team contributions.

H2: Territoriality of knowledge has a significant negative effect on academic performance

2.2.3 Sense of Relatedness and Academic Performance

Relatedness, as a component of self-concept, is an essential area of academic research (Furrer & Skinner, 2003; Ryan & Deci, 2000). Individuals are born with a desire to connect with others; they form communities and build social networks. According to Ryan and Deci (2000), if students meet the requirements for social relatedness in school, they feel strongly connected to others and experience a positive sense of belonging, leading to active involvement in social and academic interactions, affecting their academic performance. Furrer and Skinner (2003) emphasize the importance of a sense of relatedness for students' involvement and academic performance, noting that friendships among students influence their peers' impact on them, indirectly affecting their academic performance. Li et al. (2021) also highlight that a strong sense of belonging can enhance students' motivation and engagement in school activities, further contributing to improved academic performance.

Previous research consistently shows that meeting basic psychological needs, such as relatedness, significantly enhances academic performance (Cheon & Reeve, 2015; Liu & Flick, 2019). Students who feel isolated or rejected by social peers are more likely to experience frustration and reduced participation and engagement in learning activities, negatively affecting their academic performance. Other studies show that the perception of peer support is related to academic performance (Buhs, 2005; Fronzetti Colladon & Grippa, 2018). In a group of students, the number of peers participating in the same activities is associated with academic outcomes such as participation and GPA (Knifsend et al., 2018). Given the importance of peer relationships for students' academic performance, promoting positive relationships should be considered (Leung et al., 2021).

H3: Sense of relatedness has a significant positive on academic performance

2.2.4 Performance Motivation and Knowledge Hiding

Connelly et al. (2009 cited in Garg et al., 2021) identified competition as a barrier to knowledge sharing, and individuals with high performance motivation are more likely to hide knowledge from their peers. This is in line with the definition of performance-prove goal orientation (PGO) provided by Garg et al. (2021), which includes the desire to compete and outperform others. Zhu et al. (2019) found that individuals with high PGO are likelier to hide knowledge from their colleagues. The competitive nature of PGO (Černe et al., 2014; Rhee & Choi, 2017) suggests that individuals with high PGO are more likely to hide knowledge from their peers (Zhu et al., 2019). Furthermore, PGO can promote or suppress KHi (knowledge hiding), depending on the context that indicates a comparison and competition (Zhu et al., 2019). Given that PGO can stimulate competition, it is suggested that individuals who experience high levels of competition with their peers are more likely to engage in knowledge hiding behavior (Semerci, 2019).

H4: Performance motivation has a significant positive on knowledge hiding

2.2.5 Territoriality of Knowledge and Knowledge Hiding

Brown et al. (2005 cited in Garg et al. 2021) conceptualized territoriality as the behavior of establishing, communicating, maintaining, and restoring territories (knowledge or information). The theory of territoriality in the study by Garg et al. (2021) extends this definition to include knowledge, skills, and expertise with which a student feels an "exclusive attachment." Huo et al. (2017 cited in Li et al., 2020) define knowledge territoriality as stemming from the perception of ownership and the expression of specific knowledge. Territoriality of knowledge indicates a restricted area of knowledge protected and utilized by individuals or groups as an exclusive resource, evidenced by the exhibition of protective and defensive behaviors (Huo et al., 2016; Li et al., 2020; Peng, 2013).

Yuen and Majid (2007 cited in Garg et al., 2021), explain that students perceive hidden knowledge as a personal and "exclusive" resource, leading to a competitive advantage over their peers). The fear of losing ownership and control over knowledge (Garg et al., 2021; Sun & Scott, 2005) also causes students to hide knowledge instead of transferring it to the knowledge seeker. A primary outcome of territorial behavior is marking—claiming and communicating a territory, which involves publicly announcing one's ideas and defending—protecting the territory against others (Brown et al., 2014; Peng, 2013; Singh, 2019). Peers with high territoriality are more likely to engage in knowledge hiding from others

(Peng, 2013; Singh, 2019), leading to a cycle of mutual distrust, which results in further knowledge hiding from others (Černe et al., 2014; Singh, 2019).
H5: Territoriality of knowledge has a significant positive on knowledge hiding

2.2.6 Sense of Relatedness and Knowledge Hiding

Interactions with social partners shape an individual's self-image within a relationship and subsequently determine their response to future social exchanges (Furrer & Skinner, 2003; Garg et al., 2021). One of the leading social partners for students is their peers, who play a significant role and have the strongest influence on their daily behavior in academic institutions (Garg et al., 2021; Steinberg et al., 2016). This sense of relatedness with peers can be critical in shaping students' knowledge hiding behavior (Garg et al., 2021). Sulistiawan et al. (2022) researched knowledge hiding within organizational contexts and described ways to ensure that it can be minimized or to ensure that knowledge transfer among colleagues can be smoothly achieved in an organization; the organization must emphasize the interdependence between individuals and others through assigned tasks.

However, the findings differ from Yang and Ribiere (2020) who studied knowledge hiding within university contexts and explained that relatedness with peers and knowledge hiding could have a positive relationship. This is due to a need for reciprocity in sharing information or knowledge. It was also explained that even if individuals have closeness with peers, knowledge hiding can still occur due to a lack of confidence in their tacit knowledge, such as doubts about the correctness of their tacit knowledge and feeling ashamed to share it (Yang & Ribiere, 2020).
H6: Sense of relatedness has a significant positive on knowledge hiding

2.2.7 Knowledge Hiding and Academic Performance

Knowledge hiding is a deliberate effort by an individual to withhold or conceal knowledge requested by someone else (Connelly et al., 2012)). KHi is a unique and distinct construct that can occur at the individual level when someone hides knowledge from their peers (He et al., 2021); individuals see their peers as threats and refrain from sharing knowledge. The tendency to hide knowledge is also governed by individual personality traits and the level of emotional intelligence (Issac & Baral, 2018). Connelly et al. (2012) state that there are three types of knowledge hiding an individual might engage in with another individual: playing dumb, where the knowledge hider pretends not to know the requested information; evasive hiding, where the knowledge hider intentionally provides incorrect, partial (incomplete), or misleading information; and rationalized hiding, where the knowledge hider attempts to justify not sharing knowledge with others by stating that the information is confidential or they are not allowed to share it.

According to Nguyen et al. (2022), the motivation for engaging in KHi can also stem from the fear of losing "hardly won" market value due to significant efforts and long training periods and the fear of becoming hosts to "knowledge parasites" who only seek to benefit from requesting knowledge without putting in enough effort to acquire it themselves. Wang et al. (2019) mentioned that knowledge hiding could yield positive outcomes for the knowledge hider in terms of enhancing their relative importance to the institution. The study by Khoreva and Wechtler (2020) revealed that knowledge hiding increases performance. Knowledge is a crucial resource, and individuals who hide knowledge can increase others' dependence on the knowledge they possess and provide (Evans et al., 2015b).
H7: Knowledge hiding has a significant positive on academic performance

2.2.8 The Mediating Role of Knowledge Hiding

Anand et al. (2020) describe knowledge hiding as various types, with motivational hiding (driven by performance and competition) being one. Consistent with the concept of performance motivation, utilizing the performance-prove goal orientation variable offers an approach to predict an increase in knowledge hiding levels. Zhu et al. (2019) detail how performance-prove goal orientation forecasts a rise in knowledge hiding levels and is positively correlated. Additionally, goal orientation is significant for understanding students' academic performance as it influences task performance and learning and how students respond to feedback in learning situations (Skinner et al., 2022).
H8a: Knowledge hiding mediates the relationship between performance motivation and academic performance

Singh (2019) suggests that individuals with a sense of territoriality exhibit lower performance due to the lack of cooperation from their peers. It is also shown that knowledge hiding leads to distrust among the targets of knowledge hiding, who then reciprocate the same behavior towards the knowledge hiding actors (Černe et al., 2014; Connelly et al., 2012). Other literature describes various consequences of knowledge hiding within organizations, such as territoriality (Peng, 2013). Knowledge hiding behavior has been reported to decrease individual and organizational performance (Connelly et al., 2012) and damage interpersonal relationships among coworkers (Connelly et al., 2012).
H8b: Knowledge hiding mediates the relationship between territoriality and academic performance

According to Garg et al. (2021), a sense of relatedness has been found to motivate knowledge sharing, leading to reduced knowledge hiding behavior Click or tap here to enter text.. Sense of relatedness with peers as a form of social interaction reflects the extent to which an employee personally knows and maintains close social relationships with

coworkers (de Clercq et al., 2009; Wang et al., 2019). As social interactions increase, individuals have access to more sources of knowledge relevant to their own (Wang et al., 2019). Besides the positive relationship between student-peer interactions and academic performance, building social networks also gives students a sense of relatedness (van Herpen et al., 2020).

H8c: Knowledge hiding mediates the relationship between sense of relatedness and academic performance

Based on the explanations above, this study proposes eleven primary hypotheses. These hypotheses are illustrated in Figure 1 below.

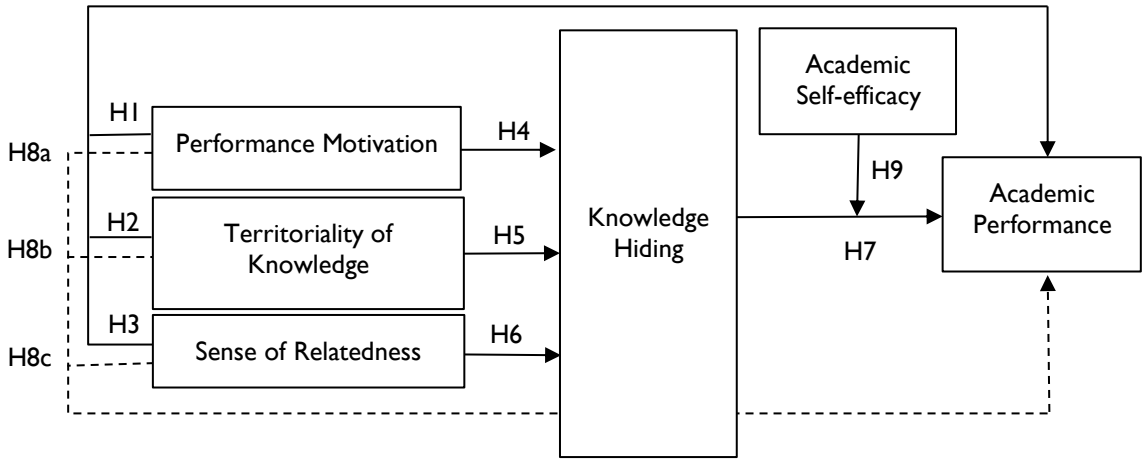

Figure 1. Conceptual Framework and Hypothesis

2.2.9 The Moderating Role of Academic Self-Efficacy

Elias and MacDonald (2007 cited in Garg et al., 2021) define the concept of academic self-efficacy (ASE) as a student's belief in their ability or competence to achieve academic goals efficiently. ASE is identified as a strong predictor of academic success, including grades and persistence (Chemers et al., 2001; Garg et al., 2021; Zajacova et al., 2005). Students with high ASE are presumed to have high motivation and resilience in completing their academic tasks and efficiently applying their acquired knowledge and learning (Garg et al., 2021). Furthermore, students with high levels of ASE demonstrate confidence in their abilities and competencies (Garg et al., 2021). Students with high academic self-efficacy are assumed to have high motivation and resilience to successfully complete their academic tasks and efficiently apply the knowledge and learning acquired.

Garg et al. (2021) state that academic self-efficacy influences the positive relationship between knowledge hiding and academic performance, becoming stronger when academic self-efficacy is low and vice versa. Bock et al. (2005 cited in Chawla & Gupta,2020) found support for the idea that individuals' assessment of their capabilities or self-efficacy positively affects knowledge sharing. Applying these findings to the construct of knowledge hiding, self-efficacy could reduce the amount of knowledge hiding behavior (Chawla & Gupta, 2020). Self-efficacy enables individuals to be more confident in their knowledge abilities for learning and creating new knowledge, which can further minimize the fear of losing knowledge power (Zhang & Min, 2021).

H9: Academic self-efficacy moderates the significant positive effect between knowledge hiding and academic performance. Furthermore, academic self-efficacy will strengthen the positive relationship between knowledge hiding and academic performance.

3. Method

3.1. Sampling

In the current research, the sample used was a non-probability sampling method, purposive sampling (Cooper & Schindler, 2014), to identify the desired participants. Judgment sampling occurs when researchers select sample members to fit several criteria (Cooper & Schindler, 2014). Participants in this research were students pursuing undergraduate education from several universities in Indonesia who were at least at the second-year level and had a GPA of at least 3.00, which was used as a criterion to control academic performance. Using the second-year criteria will provide more insight into achievements by looking at the GPA range over a more consistent period. The research has 36 (thirty-six) indicators.

Indonesia was chosen as a sample because data from the Organization for Economic Co-operation and Development (OECD) in 2021 show that most of Indonesia's workforce comes from higher education compared to other levels of study (OECD, 2022). Higher educational attainment is often associated with better employment

prospects, and Indonesia is no exception. In 2021, the employment rate among 25-34-year-olds with tertiary education in Indonesia was 12 percentage points higher than those with below-upper-secondary attainment and 10 percentage points higher than those with upper-secondary or post-secondary non-tertiary attainment (OECD, 2022). Indonesia was chosen as a suitable research location because the country has a diverse and large student population across various universities, which provides a rich dataset for studying knowledge hiding behaviors.

Indonesia faces significant challenges in higher education; currently, the educational system in Indonesia still needs to fully meet society's expectations (Kalangi et al., 2021). The selection of the education sector, specifically higher education institutions or universities, is because universities play a crucial role in shaping the future of society, influencing societal well-being, economy, and politics (Solas & Sutton, 2018). Education plays a vital role in national development. If a country's education is of high quality, it will produce good results (Solas & Sutton, 2018). The low quality of graduates and unresolved educational issues mark this phenomenon. Therefore, Indonesia needs to improve the academic performance of its higher education institutions. Academic performance impacts organizational performance when their human resources are of low quality.

3.2. Data Collection

The data collection involved distributing questionnaires to respondents who met the sample criteria. This study relies on the questionnaire responses as the primary data source, with anonymous determined so as to reduce social desirability bias, this is because research related to hidden knowledge is quite sensitive. The method used was cross-sectional, and the questionnaires were designed to gather responses related to the research variables from university students in Indonesia. This method allowed for data collection from many respondents over a specified period, ensuring that the sample was representative of the population under study.

The respondents were approached online using Google Forms. The questionnaires were distributed electronically via social media platforms like Instagram, Twitter, Telegram, Line, and WhatsApp. This online approach facilitated reaching a broader audience and ensured the data collection process was efficient and timely. This approach ensured convenience for the respondents and broadened the reach to include students from various universities across Indonesia. The respondents collected according to the characteristics in the current research amounted to 252 respondents. In total, 252 responses were obtained through sampling over 65 days.

3.3 Measure

All variables in this study were measured using a seven-point Likert scale, ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The testing was conducted using the bootstrapping method with SmartPLS 3.2.9. SEM has a higher level of flexibility in research that connects theory and data, and it can conduct path analysis with latent variables, making it frequently used by researchers focusing on social sciences (Hair et al., 2017, 2021). The developed hypotheses set was tested using the structural equation modeling (SEM) statistical technique. SEM allows for path analysis with latent variables and enables the statistical testing of relationships between multiple dependent and independent variables simultaneously (Chin, 1998). Thus, SEM is considered the most suitable technique for this study. The statistical analysis technique used in this research is partial least squares (PLS). PLS was first developed by Wold and Bertholet (1982), and this technique aims to estimate the effects on independent variables on the dependent variable and explain the theoretical relationship between these two variables.

Table 1. Definition and Measurement

Variable	Operational Definition	Variable Measurement	Resource
Academic Performance	The measurable outcomes of a student's educational activities include participation in the learning process, completion of classroom exercises, performance on quizzes, and results from exams.	ACP1: I can accurately complete more assignments relative to my batch mates ACP2: The quality of my work has been consistent throughout the program ACP3: I always accurately follow my professor's instructions regarding any presentation and/or assignments ACP4: I always participate in in-class discussions ACP5: I am quick to learn new things taught to me by my professor ACP6: I always pay attention in the class ACP7: I often require my professor's assistance to complete my academic work	DuPaul et al. (1991)

Variable	Operational Definition	Variable Measurement	Resource
Academic Self-Efficacy	Students' beliefs and attitudes toward their ability to achieve academic success and their confidence in their ability to complete academic tasks and successfully learn the material.	ASE1: I am sure that I can master the skills taught to me ASE2: I am sure that I can figure out how to do even the most difficult assignments ASE3: I can do almost all the work in class if I do not give up ASE4: Even if the assignment is hard, I can learn it ASE5: I can do even the hardest assignment in this course if I try	Midgley et al. (2000)
Knowledge Hiding	A student takes this action to conceal/hide their knowledge or information from other students.	PKHI1: Sometimes, when my batch mates ask about some important academic work information, I pretend I do not know it PKHI2: Sometimes, when my batch mates ask about some important academic work information, I say that I do not know, even though I do PKHI3: Sometimes, when any of my batch mates ask me about some important academic work information, I pretend not to understand what he/she is requesting PKHI4: Sometimes, when my batch mates ask me about some important academic work information, I pretend I am not knowledgeable enough for the topic, even though I think I am EKHI5: Sometimes, although I agree to help my batch mate with some assignments, I never end up helping him or her EKHI6: Sometimes, although I agree to help my batch mate with some assignments, I deliberately provide some different or wrong information as against what he or she was asking for EKHI7: Sometimes, although I agree to help my batch mates with some assignments, I deliberately cause as much delay as possible EKHI8: Sometimes, I intentionally provide some other information to my batch mate as against what he or she was asking for RKHI9: Sometimes, when any of my batch mates ask me for some information, I say that I will not answer his/her questions RKHI10: Sometimes, when my batch mates ask me for some information, I say that the information is confidential and available only to people working on a particular project/	Connelly et al. (2012)

Variable	Operational Definition	Variable Measurement	Resource
		assignment RKHI11: Sometimes when my batch mates ask me for some information, I tell them that the professor told me not to share the information RKHI12: Sometime, when my batch mates ask me for some information, I explain that I would like to tell them, but I am not supposed to	
Performance Motivation	Having a strong motivation to learn and employing effective study strategies leads to improved academic achievement.	PMO1: Getting a good grade is the most satisfying thing for me PMO2: The most important thing for me is to improve my overall grade point average, so my main concern is to get a good grade PMO3: If I can, I want to get better grades than most of the other students PMO4: I want to do well because it is important to show my ability to my family, friends and batch mates	Haynes et al. (2008)
Sense of Relatedness	It fosters connections amongst students by identifying commonalities in their socializing, thinking, and behavior.	SR1: I feel accepted and part of the group SR2: I feel like someone special in the group SR3: I do not feel ignored in the group SR4: I feel important in the group	(Furrer & Skinner, 2003)
Territoriality of Knowledge	Impression based ownership refers to the possession of knowledge or information based on one's impression of ownership.	TK1: I protect my ideas from being used by others in the university TK2: I expect that my batch mates will not use my ideas without my permission TK3: I guard my knowledge from others at the university TK4: I tell my batch mates not to use information, ideas and knowledge that belongs to me	(Singh, 2019)

Notes: PKHI = Knowledge Hiding Playing Dumb; RKHI = Rationalized Knowledge Hiding; EKHI = Evasive Knowledge Hiding.

4. Result and Discussion

Based on the obtained data, the majority of respondents, 79%, are female, and 49.6% are in their fourth year of study. Most respondents achieved GPAs in the range of 3.5-3.79, accounting for 46%, and 31% achieved GPAs in the range of 3.75-4.00. More detailed information can be seen in Table 1.

Table 1. Respondent characteristic

Category	Subcategory	Frequency	Percentage (%)	Cumulative per cent
Gender	Female	53	21	21
	Male	199	79	100
Age	<18	0	0	0
	18-20	58	2.1	2.1
	21-22	147	58.3	8.4
	>22	47	18.6	100
Year of Study	2nd year of study	41	16,.1	1.,1
	3nd year of study	45	18.5	34.,6
	4nd year of study	126	49.6	84.2

Category	Subcategory	Frequency	Percentage (%)	Cumulative per cent
	>4nd year of study	40	15.7	100
GPA	3,0 - 3,24	13	5.1	5.1
	3,25 - 3,49	45	17.9	23
	3,5 - 3,79	116	46	63
	3,75 - 4,00	78	31	100
Knowledge Field	*Life Sciences & Medicine*	46	18.3	1.3
	Engineering	25	9.9	28.,2
	Natural Sciences	14	5.6	33.8
	Socio Humanities	163	64.6	98.4
	Arts and Humanities	4	1.6	100
College	*State Higher Education*	173	68.7	68.7
	Private Higher Education	45	17.9	86.6
	Religious Higher Education	34	13.4	100

Based on the obtained data, Figure 2 displays each hypothesis with coefficient values and path values, along with R-square.

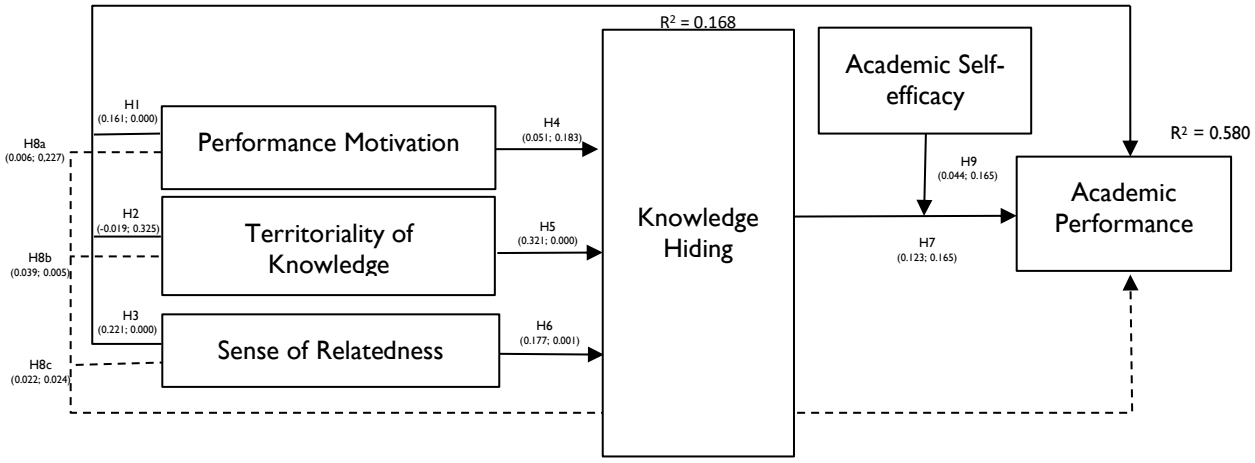

Figure 2. Framework

Outer model

This study utilized SmartPLS 3.2.9 for conducting tests. After eliminating data and processing, the fourth outer loading factor achieved significant results. Consequently, all indicator projections reached above 0.7 at this stage, making them suitable measurements for each variable (Table 3). Composite reliability (CR) and average variance extracted (AVE) were assessed to ensure the reliability of all variables, with CR values ≥ 0.70 and AVE values ≥ 0.50. This indicates the validity of the constructs. An AVE ≥ 0.50 suggests that the construct explains more than half of the variance of its indicators. Table 3 shows that Cronbach's alpha and composite reliability values were above the commonly accepted threshold of 0.70, so all variables in this study are reliable and can be relied upon when further analysis is carried out.

Table 2. Convergent Validity and Reliability

Variable	Item Code	Factor Loading	AVE	CR	Cronbach's Alpha
Performance Motivation (PMO)	PMO2	0.852	0.666	0.799	0.501
	PMO4	0.778			
Territoriality of Knowledge (TK)	TK2	0.893	0.900	0.964	0.943
	TK3	0.974			
	TK4	0.976			
Sense of Relatedness (SR)	SR2	0.904	0.831	0.908	0.797
	SR4	0.920			
Knowledge Hiding (KHi)	EKHi1	0.730	0.666	0.947	0.937
	EKHi2	0.813			

Variable	Item Code	Factor Loading	AVE	CR	Cronbach's Alpha
	EKHi3	0.752			
	EKHi4	0.828			
	RKHi5	0.753			
	PKHi9	0.853			
	PKHi10	0.872			
	PKHi11	0.863			
	PKHi12	0.865			
Academic Self-Efficacy (ASE)	ASE1	0.833	0.669	0.890	0.837
	ASE2	0.842			
	ASE4	0.809			
	ASE5	0.787			
Academic Performance (ACP)	ACP1	0.843	0.653	0.799	0.822
	ACP2	0.818			
	ACP4	0.733			
	ACP5	0.835			
	ACP6	0.750			

Table 4 highlights the bolded numbers, signifying that these values are suitable as they are higher than the other relationships between constructs. The outcomes of all relationships in this data analysis are favorable and appropriate since all variables exhibit values lower than the variable within itself. In essence, this indicates that the constructs demonstrate good discriminant validity.

Table 4 Discriminant Validity (Fornell-Larcker Criterion)

	ACP	ASE	KHi	PMO	SR	TK
ACP	**0.808**					
ASE	0.690	**0.818**				
KHI	0.239	0.058	**0.816**			
PMO	0.367	0.286	0.133	**0.816**		
SR	0.494	0.390	0.250	0.160	**0.912**	
TK	0.119	0.031	0.365	0.167	0.202	**0.948**

Inner model

According to Hair et al. (2017), once the outer model requirements are met, the subsequent step involves assessing the inner model. In this research, the inner model will be evaluated through the examination of R-square and estimated path coefficients.

Outer model

A higher R-square value indicates a stronger influence of the variable on its association with other relevant variables in the study (Hair et al., 2021). The table above illustrates the disparity in R-Square outcomes between the two variables. The R-Square value for the academic performance (ACP) variable is 0.580, higher than the R-Square value for the knowledge hiding (KHi) variable, which is 0.168. According to Hair et al. (2017, 2021), a variable with a value less than 0.25 is considered weak or low, a value less than 0.50 is considered moderate, and a value less than 0.75 is categorized as strong regarding its influence on the variable (Figure 2).

The academic performance variable is worth 0.580, so the R-Square value for the academic performance variable includes moderate criteria. This explains that all exogenous variables can explain 58% of the variation in endogenous variables, while the other 42% is explained by other variables not included in the research model. Meanwhile, the R-Square value for the knowledge hiding variable is 0.168, which is in the weak category. So, the variability of knowledge hiding can be explained by the variable's performance motivation, territoriality of knowledge, and sense of attachment in the model of 16.8%.

Path coefficients

This path coefficient depicts the results of the bootstrapping process, illustrating the prediction of a relationship within the research. This is beneficial for obtaining information on the significance value in the research model,

understanding the magnitude of partial influence, and indicating the direction of the positive or negative relationship between variables. When the path coefficient value approaches 1, the relationship between the variables becomes weaker and insignificantly different (Hair et al., 2017, 2021)

There are limitations to the path coefficient testing, which can also be seen from the original sample to determine the direction of the variable relationships. If the path coefficient value is >0, it indicates a positive influence, and conversely, if the path coefficient value is <0, it indicates a negative influence (Hair et al., 2017, 2021). The coefficient is used to assess significance; if the value is >1.96, then the hypothesis is significantly related (Hair et al., 2017,2021). Additionally, P-values are used to determine whether the relationship between variables is influential; it is considered to have an effect if the P-value is <0.05 (Hair et al., 2017, 2021).

Table 5. Hypothesis Test Result

	Original Sample (O)	Coefficient	P Values	Details
H1: PMO → ACP	0.161	4.182	0.000	Accepted
H2:TK → ACP	-0.019	0.454	0.325	Rejected
H3: SR → ACP	0.221	4.339	0.000	Accepted
H4: PMO → KHi	0.051	0.906	0.183	Rejected
H5:TK → KHi	0.321	6.163	0.000	Accepted
H6: SR → KHi	0.177	3.274	0.001	Accepted
H7: KHi → ACP	0.123	2.899	0.002	Accepted
H8a: PMO → Khi → ACP	0.006	0.751	0.227	Rejected
H8b:TK → Khi → ACP	0.039	2.566	0.005	Accepted
H8c: SR → Khi → ACP	0.022	1.976	0.024	Accepted
H9: KHI→ *ASE→ ACP	0.044	0.977	0.165	Rejected

Based on the results of previous data (Table 5), the direct relationship between H2 and H4 is rejected because the P-value of H2 is 0.325 and H4 is 0.183; it is declared insignificant because >0.05. Then, H1, H3, H5, H6, and H7 are accepted because the original sample aligns with the hypothesis, and the p-value of the five hypotheses is significant because it is <0.05.

The proposed mediation relationship between H8a is not supported; this conclusion arises from the lack of mediation as both the direct and mediation relationships fail to demonstrate significance, given that their P-values are >0.05. The mediation relationship in H8b is full mediation because the direct relationship in H2 is insignificant, but the indirect effect in H8b is significant. After being associated with the direct and indirect effect relationship, it indicates that whether there is KHi, the influence between TK and ACP becomes significant. For this reason, H8b is accepted. Furthermore, the mediation relationship in H8c has a partial mediation relationship because, after being associated with the direct and indirect effect relationship, it indicates that whether or not there is KHi, the influence between SR and ACP remains significant. For this reason, H8c is accepted. Last, the moderation relationship in H9 is accepted. It is known that ASE significantly moderates the effect of KHi on ACP. So, respondents with higher ASE can have a stronger influence on the KHI variable's ACP.

4. Discussion

The current study built upon the TRA and proposed sense of relatedness (SR), performance motivation (PMO), and territoriality of knowledge (TK) as drivers of KHi behavior among students, extending it to the probable positive impact on their academic performance (ACP). The results support the finding that PMO positively and significantly influences ACP among university students. Consistent with previous research indicating that a lack of motivation can decrease ACP and even cause students to drop out of their studies early (Garg et al., 2021; Haynes et al., 2008; Usán et al., 2019). In this context, students with high PMO tend to pursue competitive excellence and demonstrate their abilities to others (Trigueros et al., 2020). These findings also support the concept of performance-prove goal orientation, similar to PMO (Dietz et al., 2015; Webster et al., 2008; Zhu et al., 2019). The high average value of PMO indicates that students have a strong drive to achieve academic excellence, especially in obtaining good grades (Dikaya et al., 2019; Firdous & Riaz, 2021). Consistent with Garg et al. (2021), PMO positively influences knowledge hiding (KHI). Garg et al. (2021) identified competition as one of the barriers to knowledge sharing, and thus, an individual may prefer to intentionally hide information, driven by the desire to outperform others. Students with high PMO are likelier to hide requested knowledge from their peers, which may trigger competition. It is suggested that individuals who perceive high competition with their peers are likely to engage in KHI behavior (Garg et al., 2021; Semerci, 2019; Zhu et al., 2019).

The research results indicate that TK has a negative and insignificant effect on ACP (Singh, 2019). Singh (2019) hypothesized that a distrust loop develops between actors and targets, wherein each knowledge hider and knowledge seeker impacts productivity and performance negatively in the study process. Feelings of territoriality lead peers to remain preoccupied with communication and maintaining ownership claims over knowledge, skills, expertise, etc., thereby reducing focus on ACP and organizational goal achievement (Singh, 2019). Feelings of psychological ownership and territorial behavior in the workplace increase the extent to which colleagues isolate themselves (Pierce et al., 2009; Singh, 2019), resulting in a lack of assistance, cooperation, and collaboration among them, thus negatively affecting their task performance. Consistent with Sun and Scott (2005) and Garg et al. (2021), this sense of ownership motivates individuals to protect knowledge from others, implying that territoriality motivates KHi. When valuing ownership over knowledge rather than its dissemination leads to the development of territorial rights, resulting in a fear of losing ownership and control over knowledge. Individuals with high territoriality tendencies are likelier to engage in KHi than others (Černe et al., 2014; Li et al., 2020; Peng, 2013; Singh, 2019).

Consistent with previous research, the significance of SR in students for their engagement and ACP is emphasized (King, 2015; Li et al., 2020). Relatedness in the learning process significantly enhances engagement and improves ACP (Buhs, 2005; Fronzetti Colladon & Grippa, 2018; Liu & Flick, 2019). It is noted that relatedness with parents, teachers, and peers is associated with classroom engagement within student groups, which is crucial for ACP (Leung et al., 2021; Mikami et al., 2017; Moreira et al., 2018). However, the study by Yang and Ribiere (2020) investigating KHi in the university context explains that relatedness with peers and KHi may have a negative association. This is attributed to the 'lack of reciprocity' in sharing information or knowledge. It is further elucidated that even if individuals have closeness with peers, KHi may still occur due to a lack of confidence in their tacit knowledge, such as assumptions about whether their tacit knowledge is correct or feeling embarrassed to share (Yang & Ribiere, 2020).

It was found that students who possess knowledge also have freedom regarding their transfer and will often use this freedom to maximize their outcomes, such as ACP (Evans et al., 2015b; Garg et al., 2021). Hiding knowledge from certain individuals can allow individuals to exert superior influence over that knowledge. Finally, those with proprietary knowledge can expand their information networks and create disproportionate value (Khoreva & Wechtler, 2020; Lepak et al., 2003).

Knowledge hiding was found not to mediate between PMO and ACP. There is a possibility that this is because, looking at the demographics, most respondents are in their fourth year (working on their final assignment) rather than in a situation to improve their ACP (GPA). They are not experiencing KHi behavior or protecting their information or knowledge because they no longer see others as competitors in the ACP process. KHi successfully mediated TK to ACP (full mediation) and SR to ACP (partial mediation). From these results, it can be interpreted that territoriality of knowledge can influence academic performance, so when students want to improve academic performance, it may lead to KHi behavior by protecting the information or knowledge they have (Garg et al., 2021; Singh, 2019). Meanwhile, a sense of relatedness can influence ACP, so when students want to improve ACP among peers, it may lead to KHi behavior. Therefore, when the academic institution fails to perceive a positive learning environment, such as fostering knowledge-sharing behavior, hiding behavior among students, even with relatedness, can still occur, resulting in a cycle of mutual distrust among colleagues and leading to further KHi (Blau, 2017; Connelly et al., 2012; Singh, 2019).

The research results also indicated that self-efficacy, which refers to students' confidence in their abilities, does not moderate the relationship between KHi and ACP. Put differently, the findings suggested that high academic self-efficacy (ASE) might diminish the positive link between KHi behavior and ACP. This implies that individuals with high ASE might impress others with their knowledge or expertise in pursuing academic excellence, potentially leading to a negative and insignificant moderation effect (Garg et al., 2021; Yokoyama, 2019; Zhang & Min, 2021). Additionally, the study explores other factors within the model, such as "general self-efficacy," "territoriality," and "sense of relatedness," contributing to a comprehensive examination of KHi among students in university. This aligns with similar research on KHi conducted in non-academic organizational contexts. These findings offer interesting theoretical and practical implications, as elaborated upon subsequently.

5. Conclusion

5.1 Theoretical Implication

This research contributes significantly to the literature on knowledge hiding in academic institutions by expanding the understanding of this behavior, which has predominantly been studied in organizational or work contexts. Additionally, it is expected to serve as a foundation for future research on this topic in higher education. Furthermore, the findings of this study provide valuable insights for academic administrators and policymakers, affirming that knowledge hiding exists among students and can have negative implications as they enter the workforce. Although its effects may not be fully apparent, this research underscores the importance of addressing KHi behavior early on so that students can avoid such practices when they become employees in the future.

Furthermore, drawing from the theory of reasoned action (TRA), our study investigates the precursors and outcomes of KHi behavior by illustrating how attitudinal factors influence a student's inclination to engage in KHi behavior. The TRA offers a structural framework that integrates the variables under study into a cohesive model,

allowing for an examination of the factors that shape students' intentions regarding KHi behavior. This approach offers a novel perspective on understanding KHi behavior, shifting the focus from the prevalent social exchange theory perspective in the literature to one that considers the associated costs and rewards, as emphasized by Wang et al. (2019).

In addition to TRA, this research draws on social exchange theory (SET) to understand the dynamics of knowledge hiding among students. SET posits that social behavior results from an exchange process to maximize benefits and minimize costs. In the context of knowledge hiding, students may weigh the benefits of withholding knowledge against the potential costs, such as damaged peer relationships. This study extends SET by exploring how the perceived benefits and costs influence students' decisions to hide knowledge in an academic setting. By applying SET, this research provides a deeper understanding of the interpersonal factors and social interactions contributing to knowledge hiding behavior.

This research also examines the mediating and moderating roles of specific variables in the relationship between antecedents and outcomes of knowledge hiding. Knowledge hiding is explored as a mediator in the relationship between performance motivation, territoriality of knowledge, and a sense of relatedness with academic performance. The findings suggest that knowledge hiding partially mediates the territoriality of knowledge and fully mediates the effects of the sense of relatedness on academic performance. This indicates that students' inclination to hide knowledge is crucial in how these antecedents impact their academic outcomes.

Furthermore, the study investigates academic self-efficacy as a moderating variable. Although the moderating effect was insignificant, exploring this variable adds to understanding how students' confidence in their academic abilities might influence the relationship between knowledge hiding and academic performance. Including mediating and moderating variables offers a comprehensive view of the mechanisms underlying knowledge hiding behavior and its impact on academic success.

5.2 Practical Implication

The practical implications of this research indicate that academic institutions in universities need to design interventions to enhance students' sense of relatedness, thereby promoting effort, interest, and motivation for learning. This will help students feel more efficient in completing academic tasks, increase perseverance, and reduce the risk of poor ACP. This recommendation is based on the finding that a sense of relatedness significantly affects ACP.

Moreover, universities should strive to create an institutional climate that fosters collaborative and cooperative work among students. This collective effort can enhance overall ACP. Given that knowledge hiding significantly affects ACP when mediated by a sense of relatedness, it becomes a shared responsibility to reduce knowledge hiding and promote knowledge sharing. Strategies could include creating group-based assignments that require sharing and collaboration and promoting a culture of open communication and trust among students, reinforcing the sense of unity and shared responsibility.

Moreover, increasing awareness of knowledge hiding among students is crucial. Universities should recognize its impact on student-to-student relationships and work to prevent KHi behavior. This can be achieved through educational workshops highlighting the benefits of knowledge sharing and the potential long-term negative impacts of knowledge hiding in professional environments. Encouraging healthy competition that emphasizes personal growth over outcompeting peers can also be beneficial. Such efforts can reduce the likelihood of retaliatory behavior and enhance collaboration and knowledge exchange in the learning process.

Additionally, this research highlights the need to focus on performance motivation to improve ACP. The study found that performance motivation significantly positively impacts ACP. Academic institutions can improve students' performance motivation by setting clear academic goals, providing regular feedback, and recognizing achievements. Implementing motivational programs that foster a growth mindset and encourage resilience can help students stay motivated and improve their academic performance. Workshops and seminars emphasizing the importance of self-improvement and personal excellence over mere competition with peers can also enhance performance motivation.

Finally, it is crucial for universities to collaborate in designing effective interventions to change students' knowledge hiding behavior. This strategy is based on findings from social exchange theory and the theory of reasoned action, which suggest that altering the perceived costs and benefits of knowledge sharing and the social norms around it can significantly influence students' behavior. Studies have shown that positive social interactions and a strong sense of relatedness can reduce knowledge hiding, while the perceived benefits of sharing knowledge can be enhanced through targeted interventions. This may include creating a learning environment that encourages cooperation and sharing and providing incentives for knowledge sharing. By focusing on these efforts, universities can foster a more open and collaborative culture, which will support better student academic achievement and prepare students for collaborative work environments in their future careers.

5.3 Limitation and Future Research

Despite the growing interest in knowledge hiding and academic performance, the research landscape requires further exploration. Future research can bridge this gap by delving deeper into the topic. It is essential to test other

antecedent variables of knowledge hiding in different contexts or theories to observe significant effects on performance. Even in the current study, some relationships did not significantly affect performance but were still found in the observed object. Exploring these constructs in specific organizational contexts and sectors can provide valuable insights and contribute to diversifying research perspectives on knowledge hiding and academic performance.

Considering the psychological fact that variables such as self-efficacy and performance are based on self-perception, assessment may be complex. So, research that uses different sizes, scales, analysis techniques, and criteria is needed. The current study's focus on undergraduate students in higher education institutions highlights a limitation due to the lack of diversity in educational backgrounds. Future research would benefit from involving students from broader educational levels and types, such as Master's and Doctoral programs. This inclusion would allow for observing more diverse results and identifying differences in characteristics among various educational backgrounds.

Therefore, it is hoped that future studies will engage students from a broader range of educational levels to observe more varied results and potentially different characteristics among each educational background. Additionally, to avoid confusion or conflation of respondents' perceptions of the purpose of the questions, future researchers can use common method bias (CMB) techniques by adding cover stories related to the research context in each variable measurement'

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Author Contribution

Author 1: conceptualization, writing original draft, data curation, formal analysis, investigation, methodology. Author 2: conceptualization, review, editing draft, revision editing and supervision.

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Conflict of Interest

The authors have no financial or non-financial conflicts of interest that need to be disclosed in this study.

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