

## The effect of tacit knowledge and organizational learning on financial performance in service industry

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### ABSTRACT

Knowledge is considered the most crucial component for an organization to attain competitiveness. A strong emphasis on explicit knowledge rather than on tacit knowledge (TK) has been observed in information and communication technologies. A change has placed TK in the forefront of the study of organizational learning (OL) and financial performance (FP). These establishments innovate through the transformation of learning, while creating appropriate methods that respond to shifting environments. On the other hand, FP is the target of any establishment; growth and profitability are measured as essential factors for a firm's existence and survival. Several studies have already highlighted the importance of TK, but the impact of TK remains unclear. Moreover, there is no such study on developing countries, such as Saudi Arabia, that are striving to transform the economic structure into a knowledge-based economy. To fill these gaps, this study explores how TK and OL enhance FP. A sample of 168 questionnaires from Saudi's service sector was analyzed using AMOS 26 to test the relationships among TK, OL, and FP using structural equation modelling (SEM). Also, confirmatory factor analysis (CFA) was used to confirm the validity of the measurement model, showing a reliable fit for the data collected in Saudi Arabia's service sector. The SEM results confirmed that TK and OL are crucial elements of knowledge management (KM). TK and OL also generate new systems of continual change, leading to maximized organizational FP. This study develops TK as a quantifiable measure and connects this to organizational performance. The conclusion offers suggestions for management, limitations, and procedures for future research in this area.

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## 1. Introduction

Innovation in competitive market environments is seen as a central component to organizational sustainability and survival. Innovation is therefore one of the key areas through which organizations can grow sustainably, and it plays a significant role in gaining competitive advantage, corporate success, and economic growth (AlMulhim, 2017; Phong et al., 2018; Gomes & Wojahn, 2017). Previous studies have highlighted the role of innovation in the production, development, competitiveness, market value, and share of organizations (Acemoglu et al., 2018; Lynch & Jin, 2016). Many organizations that operate in emerging economies have tried to become innovators over the past few decades and contend directly with their peers in developed market economies. To achieve these objectives, organizations require tacit knowledge (TK) and organizational learning (OL), which are vital for enhancing performance in today's ever-changing business environment. TK has been considered the basis of competitive advantage because of its inimitability and its ability to confer company-level skills imperative for product innovation (Berman et al., 2002; Grant, 1996). For particular customer needs, product innovation is the ability of firms to consistently produce new services and products in anticipation of demand (Fernandes et al., 2013). TK is rapidly becoming a strategic resource that impacts overall performance, making it the subject of both practice and research (Heffner & Sharif, 2008). TK can also boost workers' experience by helping them think outside the box and introducing creative ideas to boost the successful approaches of an organization (Prajogo & Oke, 2016). We argue that TK contributes to OL and, in so

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doing, improves performance by encouraging the knowledge creation workforce to enhance the whole knowledge base of the organization for sustainable results. TK also contributes to financial performance (FP) to give organizations a competitive edge in the market (López-Cabarcos et al., 2019). However, research reports from the existing literature are rare and produce contradictory results on the relation between TK and FP (Donate & de Pablo, 2015; Song & Zhao, 2019). Some researchers, like López-Cabarcos et al. (2019) and Manaf et al. (2018), believe that TK is implicitly tied to an organization's FP. This paradoxical clash illustrates the need for further research to expand practitioners' and scholars' understandings the relationship between TK and FP. TK and OL may also enhance FP in organizations. There is, however, a lack of research to discuss the possible value of TK and OL as crucial elements of knowledge management (Irick, 2007; King, 2009; Wu & Chen, 2014; Stokvik et al., 2016) or as an antecedent of organizational FP (Dzenopoljac et al., 2018; Muthuveloo et al., 2017; Zack et al., 2009). Some research based on this interplay has shown that there is a strong relation between these two variables (Dyck et al., 2005; Seidler-de Alwis & Hartmann, 2008). The links among the three dimensions (TK, OL, FP) have rarely been studied (Argote and Miron-Spektor, 2011; Sheng et al., 2015; Nonaka & Von Krogh, 2009). To fill this gap, the current study proposes a logical model to address how TK affects OL and enhances FP in Saudi Arabia's service sector. The paper addresses the following research question:

RQ1. What is the relationship among tacit knowledge, organizational learning, and financial performance?

## 2. Literature Review and Hypotheses

Polanyi (1962) offered explicit and tacit divisions of knowledge. Explicit knowledge (EK) may be registered, codified, processed, and extracted within organizations. From a strategic standpoint, therefore, EK is public in nature (Seidler & Hartmann, 2008), so it is not a means of competitive advantage (Grant, 1996). On the other hand, Polanyi (1962) defined TK as something that cannot be properly codified but is instead articulated in skills, competencies, experiences, and observations. Contrary to EK, TK which cannot be traded or codified at the risk of great confusion, inefficiency, and cost (Kogut & Zander, 1992) is an essential source of competitive advantage. When companies move away from intensive environments with tangible assets to intensive environments with TK, the role of managers in successfully integrating knowledge is more demanding (Thall, 2005). In addition, the transfer of TK to EK transfers knowledge from the individual's personality to that of the group and finally to the organization (Peroune, 2007). Although it is trusted to be one issue that differentiates effective executives from others, there is a lack of knowledge about the influence on the transfer of TK (Randeree, 2006). The Nonaka and Takeuchi model is perhaps the more popular and widely quoted model of knowledge creation (KC) (Nonaka 1994; Nonaka & Takeuchi 1995; Nonaka & Toyama 2003). They explained how Japanese companies in the 1980s innovated by interrelating EK and TK. They gave attention to the procedures of KC and identified two dimensions in the process of creation. The first was the epistemological element to differentiate between EK and TK, which originated in Polanyi (1958). This division has been the most commonly used and was further expanded upon by such researchers as Nelson and Winter (1982), Kogut and Zander (1992), Hedlund (1994), and Grant (1996). The second dimension was the distinction between EK and TK. Teece (1998), Guía (1999), and Zack (1999) argued that the distinction between EK and TK should not be regarded as two distinct knowledge forms, but rather as two potential knowledge states. TK plays a critical role in the progress of organizations (Nonaka & Takeuchi, 1995; Chen & Mohamed, 2010). Nonetheless, some authors proposed that TK does not inherently influence the productivity of workers at the front, which is a crucial component of company success (Paladino et al., 2016), and another author claimed that not all knowledge has a positive influence on organizational effectiveness, only information of higher value (Fallatah, 2018). Nonetheless, TK is real, and it will boost a company's creative ability, overall competitive position, and productivity (Zeng & Tang, 2014). As companies move away and become inimitable, TK gives the company a superior competitive advantage (Teece, 2007). Numerous studies have found that TK management has an influence on FP by improving employee performance and organizational capacity (e.g., Lee & Choi, 2003; Karim et al., 2012; Siu, 2006). Hypothesis one (H1), therefore, is that TK has a positive influence on FP.

OL is characterized as the process of creating, sustaining, and transmitting information within an organization. An organization enhances and gains knowledge with experience and time, so it can better increase productivity or develop valuable investor relationships (Argote, 2013). When members of the organization serve as the organization's training agents, OL becomes an ongoing learning process (Akdere & Schmidt, 2007). According to Akdere and Schmidt (2007), OL provides a viable opportunity for change and a chance for continuous internal renewal. It essentially enhances aspects of the individual learning procedure because it shares with the team what is learned by the individual (Akdere & Schmidt, 2007). The process of knowledge management (KM) also promotes the company's OL (Rudawska, 2013). Establishments should endorse training and provide useful skills to build staff knowledge. This is important because these skills are resources for the organization and have the potential to lead to business success through TK sharing (Argote, 2013). Overall, this implies that OL is an important channel for improving performance. TK plays an important role in facilitating OL (Bennet & Bennet, 2008). The second hypothesis (H2) proposed is, therefore, that TK has a positive influence on OL. The theory of OL proposes that the influence of OL occurs in two ways: exploration and exploitation (Chung et al., 2015). OL exploitation maintains the organization's prior knowledge, improves existing routines, and expands operational abilities. OL exploration builds entirely new habits and improves tactical flexibility and creativity (Dixon et al., 2007). It is important to stress that while learning is incorporated into the experiences of individual members, OL is not merely the aggregate outcome of individual experience (Popova-Nowak & Cseh 2015; Lipshitz & Popper 2000). As knowledge is a key strategic resource for organizations to process

and develop their competitive advantage (Chung et al., 2015), OL is an important element helping businesses gain competitive advantages and improve FP (North & Kumta, 2018). Dimovski (1994) used the concept of one-industry research and a stratified sample of 200 Ohio credit unions to show OL's positive impact on FP. Similar findings were drawn by Lam (1998), Sloan et al. (2002), Figueireido (2003), and Dimovski and Škerlavaj (2004). The third hypothesis (H3) proposed is, therefore, that OL at higher levels leads to better FP. The research model demonstrated in Fig. 1 will be validated by way of an online survey to verify the three hypotheses proposed in this section.

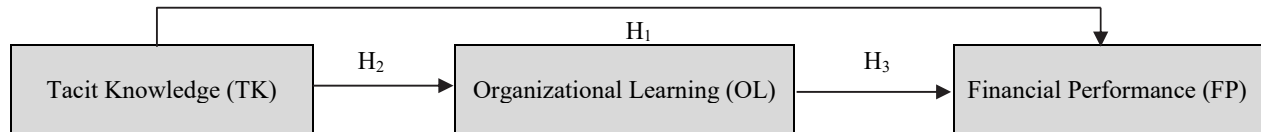


Fig. 1. Conceptual Framework

### 3. Methodology

#### 3.1 Sample and Data Collection

Organizations represent the evaluation unit of this study, based on the nature of the variables TK, OL, and FP, and the targeted respondents were organizations' managers or directors. The selected research sites for this study were local and foreign servicing organizations based in eastern and northern regions of Saudi Arabia. There were 256 service organizations with more than 50 employees in the population of this study. The first technique for data collection consisted of sending an online questionnaire, with an attached cover letter and privacy agreement, to all the organizations' managers. However, within two months, the returned questionnaires were unacceptable statistically and logically. In addition, the TK section of most of the questionnaires was left incomplete, and the response rate was very low. Accordingly, an interview was conducted with three senior managers from three companies with more than 150 employees, who agreed to ensure that survey participants would be willing to complete the questionnaire and optimize the response rate. The three senior managers insisted that the online questionnaire should be avoided and that TK must be defined clearly. Based on the updated and self-administered survey questionnaire, the random sampling technique and face-to-face method of collecting data were adopted. Also, an explanation of TK was provided as the knowledge, ideas, and observations that people have but are not codified (Chugh, 2015). From the maximum sample of 254 survey questionnaires, 177 were returned. Of these, nine questionnaires had to be rejected because they were not completed properly. The final number of usable questionnaires was therefore 168, a response rate of 66 percent.

#### 3.2 Measures

Multi-item scales were used to quantify study variables using a 5-point Likert response scale (ranging from 1 = strongly disagree to 5 = strongly agree). This research followed the TK scale that Choi and Lee (2003) suggested, also endorsed by Choi and Jung (2010). For OL, we adopted the scale suggested by Atuahene-Gima and Murray (2007), which covered the process and discovery of OL. In other words, respondents were asked to evaluate the comparative terms of competitors, measured over a three-year period (Arend, 2006), and the scale proposed by Rejc (2002) was adopted.

### 4. Results

#### 4.1 Model Evaluation Using SEM

AMOS 26 was used to analyze the data. According to Hair et al. (1998), validation of structural equation modeling (SEM) includes two steps: (1) evaluation of the overall match measurement model and testing the validity and reliability of confirmatory factor analysis (CFA) and (2) testing the structural model. The measurement model is regarded as the outer model, which includes each item in its own constructs. The structural model is regarded as the inner model, and some dependent constructs are related to other constructs.

#### 4.2 Measurement Model

Construct validity was tested by exploratory and confirmatory factor analysis. Analysis of the exploratory aspect was carried out using the promax rotation approach and main component analysis. We entered all parts of the items at the same time. We thus had three distinct factors, as was initially the case with TK, OL, and FP. Eigenvalues were greater than 1.0 for the three variables, respectively. In order to test the reliability of the constructs, Cronbach's  $\alpha$  coefficient was added. The constructs' reliability was adequate, with  $\alpha > 0.60$ , suggesting acceptable internal consistency (Hair et al., 2010). Next, CFA was applied using AMOS 26 based on the EFA output. Then, the three factors were built into a CFA model. According to Hair et al.

(2010), factor loadings below the suggested cut-off value (0.5) should be eliminated. All items exceeded loadings of 0.50. Figure 2 shows a three-construct measurement model for TK, OL, and FP. According to the output of the measurement model, root mean square error of approximation (RMSEA) should be equivalent to or less than 0.07, CFI should be greater than 0.92 (Hair et al., 2010), and standardized root mean square residual (SRMR) less than 0.09 when TLI is greater than 0.95 (Hu & Bentler, 1999); these conditions must be met to claim goodness of fit. The model fitted with  $\chi^2/df = 1.097$ , RMSEA = 0.024, GFI = 0.980, TLI = 0.995, CFI = 0.997, NFI = 0.969, IFI = 0.997, and factor loadings ranged from 0.60 to 0.93.

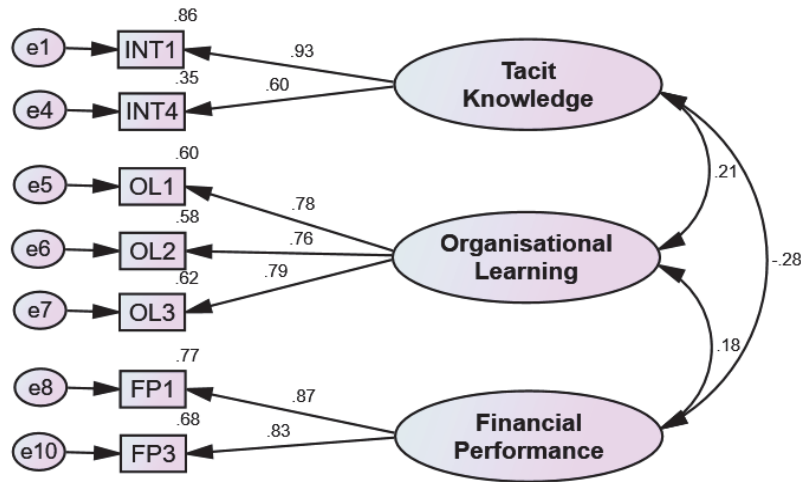


Fig. 2. Measurement Model

#### 4.3 Tests of Reliability and Validity

The validity and reliability of the constructed model were calculated by measuring CR, average variance extracted (AVE), and discriminant validity (Hair et al., 2010). The CR was estimated according to the factor loading (squared sum) of each construct and the balance of the errors of the same (Hair et al., 2010). To show good reliability, it should be more than 0.7. The sum of the squared multiple correlation was divided by the items (variables) in each construct by representing the AVE (Hair et al., 2010); these should be  $\geq 0.5$  to be considered valid. By comparing the correlation between the factors and the square root of AVE, the discriminant validity was tested. The correlation should not surpass 0.85 in value (Yousafzai et al., 2010; Kline, 2015). AVE square roots were expected to be higher than the correlation values (Hair et al., 2010), and the maximum shared variance (MSV) was less than AVE (Hu & Bentler, 1999). Table 1 displays the shaded diagonal CRs, AVEs, MSVs, and AVE square roots. Table 1 also indicates that the model was free of multi-collinearity and, as the correlation was  $< 0.8$ , both reliability and validity tests were valid (Hair et al., 2010).

**Table 1**  
Reliability and Validity Measurements

	CR	AVE	MSV	MaxR (H)	OL	TK	FP
<b>OL</b>	0.818	0.600	0.045	0.819	<b>0.775</b>		
<b>TK</b>	0.748	0.608	0.078	0.871	0.212	<b>0.780</b>	
<b>FP</b>	0.840	0.724	0.078	0.844	0.185	-0.279	<b>0.851</b>

#### 4.4 Structural Model

The causal relation between the constructs was established by using SEM after confirming the model's reliability and validity. The model had latent exogenous variables (TK) and corresponding endogenous variables (OL and FP). This is the theoretical model in its original form. To check the impact of those factors on financial performance, the pathways from TK and OL were applied to the model. The paths address the hypotheses to understand and test the relationship. In Figure 3, on the basis of this rule, the CFI was higher than 0.92, and the RMSEA should match or be smaller than 0.07 (Hair et al., 2010), whereas an SRMR less than 0.09 should be satisfied with TLI greater than 0.95 (Hu & Bentler, 1999) to have goodness of fit. According to the output of the structural model, the model was found to fit with  $\chi^2/df = 1.097$ , RMSEA = 0.024, RMR = 0.022, GFI = 0.980, TLI = 0.995, CFI = 0.997, NFI = 0.969, and IFI = 0.997. The path coefficients were tested after the model had been completed and configured. Information on the coefficients, the critical ratio, and the significance are provided in Table 2. The results showed that TK had a significantly positive effect on OL (0.212) ( $p$ -value  $< 0.05$ ) and also had positive effect on the OL of FP (0.256) ( $p$ -value  $< 0.01$ ), while TK had a significantly negative direct effect on FP (-0.334) ( $p$ -value  $< 0.05$ ). The

findings of the direct effects of structural pathways suggested that TK was substantially linked to FP ( $\beta = -0.320$ ,  $P < 0.05$ ); therefore, H1 was supported. TK also positively and significantly affected OL ( $\beta = 0.219$ ,  $P < 0.05$ ), so H2 was supported. The direct effect of OL on FP was also positive and significant ( $\beta = 0.179$ ,  $P < 0.05$ ); thus, H3 was supported. All three hypotheses were thus confirmed. Figure 2 indicates that the  $R^2$  values of OL (0.26) and FP (0.45) surpassed the minimum value of 0.1 suggested by Falk and Miller (1992), which demonstrated a satisfactory level of predictability and showed that these constructs accounted for the variance of the proposed model, at least moderately.

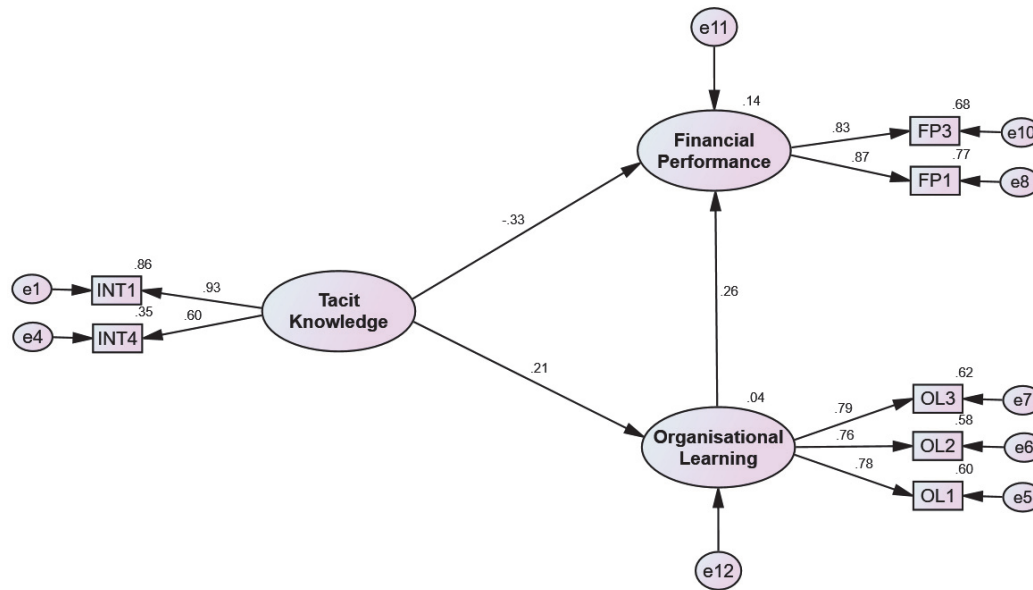


Fig. 3. Structural model

Table 2  
Results of Hypothesis Testing

Hypothesis	Pathway	Standardized effect	S.E.	C.R.	Results
H1	TK→FP	-0.334*	0.127	-2.515	Supported
H2	TK→OL	0.212*	0.111	1.961	Supported
H3	OL→FP	0.256 ***	0.090	2.632	Supported

Notes: \*\*\* $p < 0.01$ ; \* $p < 0.05$ ; TK: Tacit Knowledge, OL: Organizational Learning, FP: Financial Performance.

## 5. Discussion

This research has developed a theoretical model to observe the association between TK and OL and to study how both intangibles affect the FP of an organization. Results show that TK directly affects OL (i.e., the greater the TK within the organization, the more relevant the OL), which encourages efforts to improve FP. Therefore, TK plays a key role in increasing FP in the sense of OL. To test these findings, we proposed that TK and FP were related positively (H1). Consequently, this model has been shown to be strongly linked to OL (H2), which has a direct connection to FP (H3). All of these variables have direct effects on an organization's performance. The research stressed TK and OL, with the main aim of comparing the variables that describe how these constructs connect. We also looked at the effect of FP on the relationship between these variables. All three hypotheses have been tested. The results demonstrate a strong positive relationship between TK and FP, which supports H1. It is widely based on the views of Chen and Mohamed (2010), Zeng and Tang (2014), Harlow (2008), and Muthueloo et al. (2017), who understand TK to be of strategic importance in the creation of competitive advantages that result in corporate performance as per Grant (1996a, 1996b). Nevertheless, these results do not agree with the research of De Luca and Atuahene-Gima (2007), who found no substantial direct connection between TK and organizational performance. Results further indicate that TK has a strong positive association with organizational learning, supporting H2 in line with Rudawska (2013). Our findings also relate to previous theoretical and empirical work in the relationship between OL and FP (Rhodes et al., 2008; Bontis et al., 2002; Camps & Lona-Aroca, 2012; Hurley & Hult, 1998; Keskin, 2006), showing a positive relationship between them and thus supporting H3. Therefore, our findings show that TK and OL are critical to organization achievement. The findings lead in several ways to the advancement of scientific literature. First, our research shows that TK means that representatives of organizations' learning systems are controlled (Nonaka, 1994; Garcia et al., 2009; Ramirez et al., 2011). Second, OL helps the organization to improve its performance quality and quantity and achieve competitive advantage (Kogut & Zander, 1996). Third, we find sufficient literature at the theoretical level to support the main hypothesis of the relationship between TK and OL and how this affects FP. Our findings therefore add empirical evidence of the direct consequences of OL

(García et al., 2007, 2009; Nonaka & Konno, 1998), and it supports the viewpoint that these constructs allow innovation to continually improve organizational performance (Senge, 1990; Peters, 1992; Ramírez et al., 2011). Finally, as regards financial performance, the results give empirical evidence that there is a positive and strong relationship between OL and FP and that TK directly affects organizational performance. This knowledge conversion makes it possible for organizations to integrate new knowledge into their business strategy (Nonaka 1994), creating new knowledge at a lower cost and at a faster pace than competition (Droge et al., 2003). TK therefore gives organizations the chance to improve performance and preserve competitive advantage (as per Nonaka et al., 2000; Chia, 2003; Seidler-de Alwis & Hartmann, 2008; Nonaka & Von Krogh, 2009). Organizational learning is also essential for maintaining the best competitive advantages (Kogut & Zander, 1996; Stokvik et al., 2016). It may also be critical that organizations have KM systems that allow them to anticipate and flexibly face changes in a highly uncertain competitive environment (Ramírez et al., 2011).

## 6. Conclusions

KM is regarded as the major asset of competitive advantage for any kind of organization in today's business climate, particularly in the services sector (Aurum et al., 2003). It is already widely accepted in the business that knowledge is a vital strategic asset, and top managers need to look for the best way to express an organization's knowledge vision, as companies shift to TK. In 1991, the TK and EK concepts were popularized in an article by Ikujiro Nonaka, the renowned master of management. It can be direct or implicit knowledge. TK is personalized and shared in conversations and social networking through person-to-person communication. EK is collected, explained, and transmitted by means of IT and formal procedures (Choo et al., 2006). A critical factor in OL is the interplay of TK and EK. It is the responsibility of managers to contribute to the interplay of implicit and explicit information and to work within the company as "data agents." Managers' primary tasks are to turn implicit, human capital into visible, institutional capital. The purpose of this study was to analyze how TK impacts OL while examining the outcome of these variables on the FP of organizations. The validity of the measurement model has been confirmed through CFA and shows a reliable fit for the data collected in the target population. The SEM results confirmed that TK impacts OL while being a crucial element of KM. In addition, TK and OL can provide a new way to continually improve the performance of the organization. This study develops TK as a quantifiable measure and connects this to the FP of organizations (profitability and growth). Profitability is critical to the existence of a company; nonetheless, growth is critical to long-term survival.

## 7. Originality and Practical Implications

This study's findings could be an eye opener for organizations' management or top management in developing countries who seek to prosper and enhance their organizational efficiency. This explains the value of knowledge development and management for better organizational efficiency, particularly those of TK.

This study is a starting point; however, it has made important contributions due to its originality and practical implications. As an observable quantity, this study connects TK to FP. Applying this study may significantly decrease the awkward feeling that many managers have in financing so-called tacit-based knowledge management procedures instead of investing in simpler computer devices to test.

## 8. Challenges, Limitations, and Future Recommendations

The first and most significant task was to collect the data. At the beginning, the technique consisted of sending a questionnaire online with a letter of guidance and a declaration of confidentiality in data processing to all the organizations' managers. Within two months, the returned questionnaires were unacceptable statistically and logically. In addition, the response rate was very low. A paper questionnaire was then used as recommended by the top management. The selection of the 168 questionnaires was time consuming and required a lot of travel since the selected companies were spread across a wide geographic area. Maybe the most important recommendation of this study is to avoid using online techniques to collect data in developing countries. Despite the efforts we have made in this study, there are several disadvantages that could be addressed in future research. The results from the analysis were cross-sectional. Future research may introduce time series data to further explore the causal relationships between variables. Second, the data from this study covered eastern and northern regions of Saudi Arabia in a cross-sectional manner, and we see all Saudi Arabian regions as homogeneous. Some researchers have argued that they could be heterogeneous, thereby impacting the output of companies. Third, we suggested the direction of the relationship between TK and FP in general. Clearly, a broader empirical study is needed to develop and test the relationships between the different types of TK, such as intuition and pattern comprehension, because they are linked to dual-loop learning and paradigmatic learning imagination, which are connected to situational awareness and deep specialization—all aspects that are preconditions for performance.

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