

Knowledge Acquisition and Product Development Capability Magnify Competitive Advantage: Insight into Higher Education Institutions of Pakistan

(Pemerolehan Pengetahuan dan Keupayaan Pembangunan Produk Memperbesar Kelebihan Daya Saing: Wawasan ke Institusi Pengajian Tinggi Pakistan)

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ABSTRACT

With the emergence of a knowledge-based economy, knowledge has become an integral factor in providing a competitive advantage for organizations including higher education institutions. The objective of this study is to empirically examine the mediating effect of product development capability (PDC) in the relationship between knowledge acquisition (KA) and competitive advantage (CA) in public higher education institutions (PHEIs) of Pakistan. Data were collected through a self-administered questionnaire. A total of one hundred questionnaires were distributed through random sampling technique to vice-chancellors of PHEIs eliciting eighty-six respondents or a response rate of eighty-six percent. Data were analysed by using PLS through a structural equation modelling approach. The findings revealed significant positive effect of KA and PDC on CA. Additionally, KA also produced a significant positive effect on PDA. Further, PDA was shown to mediate the relationship between KA and CA. The current research provides more specific direction on how practitioners can strategically gain CA through KA and PDC within context of PHEIs of Pakistan.

Keywords: Knowledge acquisition; product development capability; higher education; competitive advantage

ABSTRAK

Pengetahuan telah menjadi faktor penting untuk memberikan kelebihan daya saing bagi organisasi termasuk institusi pengajian tinggi dengan kemunculan ekonomi berasaskan pengetahuan. Objektif kajian ini adalah untuk mengkaji secara empirikal kesan pengantaraan keupayaan pembangunan produk (PDC) antara hubungan pemerolehan pengetahuan (KA) dan kelebihan daya saing (CA) di institusi pengajian tinggi awam (PHEI) Pakistan. Data dikumpul melalui soal selidik yang ditadbir sendiri. Sebanyak seratus soal selidik telah diedarkan melalui teknik persampelan rawak kepada naib canselor PHEI Pakistan yang mana lapan puluh enam soal selidik telah dikembalikan semula dengan kadar tindak balas lapan puluh enam peratus. Data dianalisis dengan menggunakan SmartPLS 3.0 melalui pendekatan pemodelan persamaan struktur. Penemuan kajian semasa mendedahkan kesan positif ketara pemerolehan pengetahuan dan keupayaan pembangunan produk terhadap kelebihan daya saing. Selain itu, pemerolehan pengetahuan juga mempunyai kesan positif yang signifikan terhadap keupayaan pembangunan produk. Selain itu, ia juga didapati bahawa keupayaan pembangunan produk menjadi pengantara hubungan antara pemerolehan pengetahuan dan kelebihan daya saing.

Kata kunci: Pemerolehan pengetahuan; keupayaan pembangunan produk; pendidikan tinggi; kelebihan daya saing

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INTRODUCTION

Competitive advantage (CA) is vital for every organization as it contributes to attracting and gratifying the ultimate customers' needs and preferences. In today's dynamic environment, attaining and sustaining the CA is necessary but with some difficulty. Due to its importance, CA has been an area of research for many academicians and professionals in various fields such as leadership (Wu & Chen 2012), marketing (Alipour et al. 2010) and knowledge management (Jyoti et al. 2015). Nevertheless, De Haan (2015) and Khan et al. (2020) argued that CA is equally important and applicable in the context of higher education institutions (PHEs) particularly public institutions (PHEIs) since these have the widest outreach in providing education to the masses. This argument is based on the assumption that PHEIs are organizations that face the same competition and market challenges from their competitors as per other institutions (Khan et al. 2020). However, the conceptualization and empirical evidence of CA in the context of PHEIs are scant since the majority of past studies are qualitative in nature (De Haan 2015).

The implication of CA concept in the context of PHEIs is also limited as CA and associated concepts and theories were originally developed in the private sector (Lasakova et al. 2017). For instance, recent research conducted by Lo and Tian (2019) empirically examined the relationship between knowledge management and CA in private HEIs. Further, another similar study by Mahdi et al. (2019) in Iraq, established that knowledge management processes (knowledge generation, sharing, acquisition) are crucial factors that provide a sustainable competitive advantage to private HEIs. Hence, such institutions should invest more to create a knowledge management system that underpins knowledge management activities in order to achieve sustainable competitive advantage.

Many earlier studies have asserted that knowledge is the integral source to attain CA in the knowledge-based economy (Khan et al. 2020; Lo & Tian 2019; Mahdi et al. 2019). In such economy the intangible assets of the organizations are a vital source that contributes to sustaining its superior performance (Abbas et al. 2019). Knowledge was also considered as an intangible asset (Kashif Akram et al. 2011). In addition, Knowledge Acquisition (KA) is the most important process that elevates the assets of organizational knowledge through acquisition from various external sources which may lead to CA (Y. Liao & Barnes 2015). Furthermore, Wu and Chen (2012) argued that CA of an organization is heavily dependent on the ability of leaders to acquire new and unique knowledge from external sources. Grant (1996) maintained earlier that organizations enhance their knowledge capability through acquiring knowledge from external sources such as competitors, customers, suppliers and distributors which provide knowledge-based CA. Knowledge acquisition is based on organizational learning capability that is the source of CA as it contributes to making knowledge valuable and inimitable (Argote & Ingram 2000). Despite the importance of KA to CA, the empirical research on this relationship is however limited (Gera 2012).

Knowledge acquisition (KA) is a social process that enable organizations to acquire new knowledge to enhance their intangible assets that can consequently assist in innovating and producing new products (Moreira 2009; He et al. 2013). Ancona and Caldwell, (1990) examined the teams which developed unique products and discovered that those teams with high KA performed well in developing such products compared to those with lesser KA. The past literature has extensively discussed KA and product development capability (Yulianto 2013) alongside KA and CA (Surya et al. 2013). However, there were very few studies that empirically examined the mediating effect of product development capability (PDC) on the KA-CA relationship in the context of PHEIs in Pakistan. The PDC, in terms of unique syllabi, courses and programs are crucial for HEIs to meet the requirements of their customers (students, parents, government) (Mathooko & Ogutu 2015). Unique product offerings from HEIs may lead to their superior performance. In addition, earlier literature has extensively recorded PDC as a mediator, albeit with different variables other than KA and CA, that include quality management practices and organizational performance (Ahmad et al. 2016), knowledge management and operational performance, market orientation and organizational performance (Langerak et al. 2007). Given this prior development the present study thus aims to examine the effect of KA on CA through the mediating effect of the PDC and within the context of PHEIs in Pakistan. This novelty of this study underscored by various contribution to the existing theory on CA. Firstly, this study utilised RBV as a theoretical lens in the context of PHEIs which is scarce in the previous studies (Bobe & Kober 2015). As far as practical contribution is concerned, this study encourages practitioners of PHEIs of Pakistan to acquire more KA and PDC in order to be competitive in changing environment. Moreover, this study empirically examines the CA in the context of PHEIs which lacks in the prior literature. Furthermore, this study one of the few studies that examine mediating role of PDC on the relationship between KA and CA.

The subsequent sections highlight the relevant theories and related literature. Afterwards appropriate research design, sample and analysis tools and techniques have been highlighted. Then, analysis, results and implications have been elaborated before discussing conclusion and limitation of the research.

LITERATURE REVIEW

THEORETICAL UNDERPINNINGS AND HYPOTHESIS DEVELOPMENT

RESOURCE BASED VIEW

In this study the resource-based view (RBV) will be utilised as a theoretical underpinning/lens to draw a conceptual framework. RBV is one of the dominant theories or perspectives in the literature on strategic management (Barney & Arian, 2008). It postulates that organizational capabilities play crucial role to attain sustainable CA that consequently leads to superior organizational performance (Barney 1991). Sigalas and Economou (2013) argued that RBV identifies the unique organizational resources that contribute to developing organizational capabilities for CA. The fundamental tenet of RBV elucidates that organizations should possess idiosyncratic capabilities that may provide CA based on unique resources that are deeply rooted in them (Bobe & Kober 2015). According to the RBV, organizational resources as a package are unique, substitutable and heterogeneous in nature (Barney 1991).

Although RBV posits that organizational resources are unique, the outcome of such competitive resources is however generic in nature (i.e product innovation, knowledge management, CA) (Akram & Ahmad 2021; Helfat & Peteraf 2003; Khan et al. 2020). Due to the vast applicability of RBV, which covers a wide variability of fields, it should be equally important to the higher education sector. The earlier literature provides some ideas on the RBV in the education sector with respect to different dimensions such as partnership (Mazzarol 1997) and spin-off companies (Rasmussen et al. 2011). However, these research findings lack direct relevance to public university operations, resources and capabilities. Despite the importance and vast applicability of RBV, its usage in the context of PHEIs is surprisingly still minimal (Akram & Ahmad 2021; Bobe & Kober 2015; Khan et al. 2020).

KNOWLEDGE ACQUISITION AND COMPETITIVE ADVANTAGE

Organizations develop the KA process through which they identify and seek relevant knowledge from customers, competitors, distributors and suppliers. Organizational KA refers to its ability to acquire, share and apply the knowledge to unique commercial ends. Further, it is also important to construct a Knowledge-based view (Spender 1996) and an organizational learning theory (Argote & Ingram 2000). Wu & Chen (2012) revealed that the leader's social ties with external sources are important in acquiring new knowledge to attain CA. Such knowledge when used effectively, provides long lasting CA that might be difficult to imitate by competitors. By acquiring more knowledge, organizations may be able to achieve better performance and CA since KA adds into the knowledge repository to make it more beneficial (Cho & Korte 2014).

Similarly Jiang et al. (2016) revealed that KA from a trustworthy partner has a significant positive, linear effect on the firm's competitiveness. Li et al. (2008) argued that eminent scholars in the area of management and top organizations embrace the association of various knowledge management processes, especially KA and CA. They further suggested that organizations should focus their attention in order to enhance their KA ability to attain CA apart from creating, locating and sharing the knowledge. Dewi and Pradanawati (2021) also found KA as a significant predictor to attain CA of SMEs in Indonesia. Similarly, Agbim et al. (2014) revealed that Nigerian managers believe KA is one of the important processes of knowledge management for achieving CA in their firms. Muchanji and Makokha (2018) likewise showed that KA is equally important in banks and cooperatives to make them more competitive in the highly volatile industry including banking. They also established that KA is fundamental to realise CA through employee collaboration at every level of organization as it enhances their mutual knowledge base. In addition, KA was also identified as a significant predictor of innovation for CA (Ng et al. 2012).

Tsai (2001) and Jantunen (2005) in their pioneering studies, established that absorptive capacity enriches the KA capability of organizations to ultimately accomplish CA despite being in a highly turbulent environment. Yli-Renko and Autio (2001) also found that KA is positively correlated with knowledge exploitation for CA. Similarly, Wardhani & Kusumawardhani (2021) revealed the significant effect of knowledge acquisition on CA. Yagoub Abker et al. (2019) in a study in Sudan showed that KA as a dimension of knowledge management, plays significant role in providing CA to industrial firms. Further, Mahdi et al. (2019) discussed the important role of KA in acquiring CA in PHEIs since it enriches the knowledge assets of the organisation. As per the PHEIs the role of KA is similarly important for other industries in order to attain CA since they commonly face the same dynamic and competitive environmental challenges to attract their customers (student and parents). KA assists PHEIs to acquire external knowledge through research, courses, and programs that ultimately deliver better results to excel over their competitors. Based on the preceding development in KA as recorded in the literature the following hypothesis is proposed in this study:

H₁ Knowledge acquisition has a significant effect on competitive advantage in the PHEIs of Pakistan

KNOWLEDGE ACQUISITION AND PRODUCT DEVELOPMENT CAPABILITY

Knowledge acquisition is one of the most important processes of knowledge management as it contributes to transforming new ideas into final unique products and services (Andreeva & Kianto 2011). Organizations are heavily dependent on KA, knowledge sharing and creation to offer new products and services (Cohen & Levinthal 1990). Grant (1996) found that employees of such organizations that continuously acquire new knowledge are able to produce more novel concepts and unique products since they are inclined to new ideas generated in the process over time. When employees are part of any rich knowledge acquiring and sharing networks, they are prone to adapt to new and more dynamic environment and consequent learning of new knowledge and thus to innovate new products. Organizations that achieve success have greater ability in creating, sharing and employing new and unique knowledge in order to develop distinctive products and services (Ramesh & Tiwana 1999). In effect, new product development requires intense knowledge-based tasks (Hong et al. 2005) that aim for new knowledge creation and recombination of existing knowledge for elevating innovative capacity (Katila & Ahuja 2002). New product development capability is dependent on the KA ability of the organization since it is positively associated with new product development (Zhang et al. 2020). KA thus creates new opportunities for organizations to introduce more innovative products. For instance, KA related to marketing may motivate organizations to extend their home market to emerging or new ones (Paul et al. 2019). Accordingly, to capture these new markets, organizations will foster new ideas through KA and subsequently implement these in order to generate innovative products.

Constant offerings of unique products and services are seen as one of the important ways of success and survival in the competitive market (Mallick & Schroeder 2005). Thereby, it contributes into making the organization more prosperous (Handfield et al. 2002). In consequence, external KA has become a crucial element to produce unique products and services (Chesbrough 2003). Schleinkofer et al. (2019) similarly argued that the immense importance of KA cannot be denied when it comes to designing a unique product since it enriches the ideas of the developers. The impact of external KA, especially in inter firm cooperation, contributes to integrating internal and external knowledge and in the process in creating a unique combination to produce distinctive products and services (Frankort 2016). Against this argument the second hypothesis is thus proposed as follows:

H₂ Knowledge acquisition has a significant effect on product development capability in PHEIs of Pakistan

PRODUCT DEVELOPMENT CAPABILITY AND COMPETITIVE ADVANTAGE

Product development capability (PDC) refers to the competence of an organization to launch or offer new and unique products and services to its customers (Hanvanich et al. 2003). Urbancova (2013) found that innovative activities of organizations with respect to new product development lead to their elevated competitiveness. Similarly, Yulianto (2013), and Wahyono (2020) also maintained that continuous product innovation within organizations is a core need that may lead to gaining CA as well as enhancing their ability to face fierce competition in a dynamic market. Suliyanto (2011) also argued that an organization's capability to develop new products is necessary in order to stay in the competition and to attain CA and as such to surpass its competitors. Product development and innovation are therefore fundamental requirements for corporate CA. Further, Dewi et al. (2015) also pointed out that new product development capability contributes to enhancing an organization's ability to compete in the market as it generates sustainable CA. Product innovation can thus be used as a source of the company's competitive advantage.

Paul et al. (2019) established that the association between PDC and the CA of the organization is positive in the SME sector for leather products. Sismanto (2006) maintained that product innovation is one of the key elements to meet customer's demand. It is therefore considered as the crucial factor in achieving CA for the organization. Wahyono (2020) in a similar empirical finding, proved that PDC is a significant predictor of CA for SMEs. The debate around achieving CA through PDC has expanded from the conventional to green product innovation. Chang (2018) offered that green product development or innovation enables organizations to inimitably trigger CA. Moreover, such products permit firms to charge premium prices due to their unique style, design, and quality (Al-Abdallah & Al-Salim 2021). Similarly, Kuncoro and Suriani (2018) discovered that product innovation in terms of PDC provides sustainable CA. Given these arguments the third hypothesis is thus proposed as follows:

H₃ Product development Capability has a significant effect on CA in PHEIs of Pakistan

Knowledge-Based View (KBV) affords and discusses knowledge as an integral factor that brings innovation in all spheres of organization and it also provides CA. KBV as an extension of RBV explains that knowledge is a fundamental element that sustains CA (Grant 1996). Although knowledge is considered a core resource of product innovation and CA, consistent knowledge enhancement through acquiring new and unique knowledge is also mandatory. Through exploration and exploitation efforts, firms can create, access, transfer, use, store, and protect knowledge (Hayton et al. 2013) that fosters innovation in terms of product offerings and sustainable CA. Earlier literature extensively highlights the important role of new knowledge exploration or knowledge acquisition in nurturing innovation within organizations (Dost et al. 2019; Akram & Ahmad 2021) and its consequent development of CA. In addition, Valentim et al., (2017) argued that knowledge acquired through social interaction also stimulates innovation in the organization (i.e. PDC) since it contributes to providing sustainable CA.

KA is one of the significant factors that enable organizations to innovate their products and services to attain CA. It keeps organizational knowledge assets more dynamic thus assisting firms to align their skills and capabilities with the dynamic business environment. Market dynamism and instability due to innovation and fierce market competition contributes in developing organizational capabilities, especially in product development, in order to acquire CA (F. Akram et al. 2019). The firm's strong social ties with external players provide multiple advantages to organizations such as in enhancing new product development capability, better product quality, less time to market, better reputation and higher financial returns (F. Akram et al. 2019) and value creation (Koski & Kretschmer 2010). Such advantages ultimately lead to CA (Racela 2015). Liao & Barnes (2015) further argued that through KA organization can become competitive. They however should focus on product innovation to sustain their CA. Wahyono (2020) suggested that knowledge management activities, especially its acquisition, create a dynamic knowledge base that nurtures innovation within organizations, in terms of products and services. And this may also lead to CA.

Yulianto, (2013) and Sulyanto (2011) explained that KA plays an important role in achieving and sustaining CA through developing and offering unique products for the ultimate customers. In addition, Saranga et al. (2018) concluded that product development capability is an essential component of sustainable CA in the organisation. This however cannot be attained merely by possessing resources since it needs to be correlated and developed with new knowledge acquired through efficient learning (Tu & Wu 2021). It should accordingly sustain organizations in facing dynamic market environments and fierce competition. PDC can thus be utilized as a source of CA. With this argument the following hypothesis may be proposed.

H4 Product development capability of HEIs significantly mediates the relationship between knowledge acquisition and competitive advantage.

RESEARCH FRAMEWORK

Based on the literature survey and proposed hypotheses of the present study, a research model is developed as presented in Figure 1.

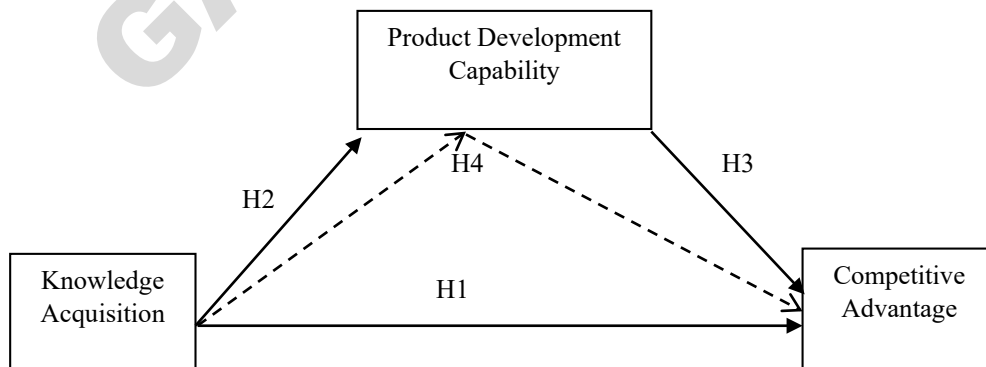


FIGURE 1. Research Framework

METHODOLOGY

DATA COLLECTION AND PROCEDURE

There is a total of 131 public higher education institutions (PHEIs) operating in Pakistan. The Krejcie and Morgan table (Krejcie & Morgan 1970) was employed in calculating the subset number of 97 PHEs from the population. A subsample of 100 was finally adopted.

The selected universities in the Punjab province, being the resident area of the researchers, were visited personally for data collection. As for the other three provinces in the country, questionnaires were emailed to the participants. An important purpose for the Punjab field visit was to explain directly to the participants the nature of academic research especially regarding data security and respondents' confidentiality. In this manner, we maximized the response rate. There were two important reasons for studying the public HEIs of Pakistan as opposed to private institutions. Firstly, since there are more PHEIs in the country the study will have wider coverage of the education in the country. Secondly, the majority of students are enrolled in PHEIs since they are more affordable than private institutions. A survey questionnaire was developed for the study and copies disseminated randomly to the vice-chancellors of 100 PHEIs covering all provinces.

The Ministry of Higher Education of Pakistan had endorsed the study and a copy of the authorisation letter was sent along with the questionnaires. A total of 86 questionnaires were returned representing a response rate of 86%. The Partial least Square Structural Equation Modelling (PLS-SEM) was employed in data analysis. The modelling is a second generation SEM that is suitable for small samplings due to its high accuracy. It is similarly appropriate for handling normality problems for primary data (Hair et al. 2019). Most importantly, it is capable of analysing complex models where multiple relationships need to be examined simultaneously (Hair et al. 2016).

MEASUREMENT OF CONSTRUCTS

Table 1 summarises the measurement items that have been utilised for the current study. The scales were both adopted and adapted from past research as recommended in the various reports. From Chen and Chang (2013) seven CA items were adopted; low-cost, program quality, courses and syllabus, better innovation, better managerial capability, growth, first-mover advantage and better image relative to those from the competitors. The Cronbach's alpha for CA was 0.80. From Kianto (2011) three measurement items of KA were adopted based on frequency of knowledge-based interaction with the external environment.

TABLE 1. Summary of measurements

Construct	Number of Items	Operational Definition	Source
Competitive Advantage	7	It refers to the low cost of programs, courses and syllabus, quality of programs, courses and syllabus, better in innovation, better managerial capability, growth, first mover advantage and better image.	Chen and Chang (2011)
Knowledge Acquisition	3	It measures how frequently PHEIs do knowledge-based interaction with the external environment.	Kianto (2011)
Product Development Capability	4	It measures the PHEIs ability to offer programs, courses and syllabus with speedily, quality, well management and successfully as compared to competitors.	Vicente-Oliva & Martínez-Sánchez (2015)

The Cronbach's alpha for this scale was 0.73. PDC measurement containing four items were adapted from Vicente-Oliva & Martínez-Sánchez (2015). This included PHEIs' ability to develop, launch and manage programs, courses and syllabi successfully for students. The Cronbach's alpha scale measured at 0.840. All scales were measured on a five-point Likert ranging from 1 to 5 where 1 denotes 'strongly disagree' and 5 denotes 'strongly agree'. In addition data were analysed by using the PLS with a structural equation modelling approach.

RESULTS

DEMOGRAPHIC CHARACTERISTICS

Table 2 presents the demographic characteristics of respondents. The majority belongs to the above 50 age group (68.60%). Most respondents have work experience of more than 25 years (66.27%). Male respondents total 70 (81.36%) while females 16 (18.60%).

TABLE 2. Demographic characteristics

Name of Variables	Category	Frequency	Percentage
Age of Respondent	30 to 35 years	0	0.0
	36 to 40 years	1	1.16
	41 to 45 years	12	13.95
	46 to 50 years	14	16.27
	Above 50 years	59	68.60
Work Experience	Less than 10 years	0	0.00
	10 to 15 years	4	4.60
	16 to 20 years	10	11.60
	21 to 25 years	15	17.44
	More than 25 years	57	66.27
Gender	Male	70	81.39
	Female	16	18.60

RELIABILITY AND VALIDITY

The reliability of all constructs was examined by using composite reliability (CR) which indicates the internal consistency of the scale. Table 2 shows that all constructs exceed the threshold level of 0.700 for appropriate and acceptable internal consistency as recommended by Nunnally (1994) and Abrar ul Haq et al. (2018).

CONTENT VALIDITY

The face and content validity of the present study was ensured by adopting and adapting the constructs from those of previous studies. Additionally, the interview instrument was sent to six subject experts and practitioners for review and following their suggestions the questionnaire was modified to improve its language and clarity.

CONVERGENT VALIDITY

The convergent validity of the constructs was assessed according to the guidelines of Fornell & Larcker (1984). To ensure this, one should examine the items of factor loadings, and for each construct the average variance extract (AVE) and CR. Table 3 shows that all item factor loadings are above the threshold value 0.700. All constructs in the survey have adequate convergent validity. Items with factor loadings less than 0.700 were deleted from the list. The CR of all constructs must exceed this threshold and the AVE accordingly exceeds the recommended 0.500 value (Abrar ul haq et al. 2019; Sarstedt et al. 2019).

TABLE 3. Convergent validity

Items	Factor Loadings	CR	AVE
CA3	0.822	0.890	0.658
CA4	0.826		
CA5	0.876		
CA6	0.801		
CA7	0.780		
KA1	0.851	0.769	0.626
KA3	0.726		
PDC1	0.704		
PDC2	0.706	0.835	0.560
PDC3	0.822		

DISCRIMINANT VALIDITY

Discriminant validity refers to the distinctiveness or uniqueness of measures while measuring different concepts. Discriminant validity can be measured by assessing the square root AVE of each construct and the value should be higher than its correlation with any other latent variable (Abrar ul haq et al. 2018). In SmartPLS, output the square root of AVE appears in the diagonal cells. Table 4 shows the adequate discriminant validity of all constructs as the bold diagonal values of the square root of the AVE of each construct which exceeds the correlation value of its focal construct.

TABLE 4. Discriminant validity

Construct	CA	KA	PDC
CA	0.811		
KA	0.362	0.791	
PDC	0.030	0.550	0.748

HYPOTHESIS TESTING

Table 5 shows the results of hypotheses testing. H₁ tested the effect of knowledge acquisition (KA) on CA of PHEIs of Pakistan. The result reveals that KA has a significant effect on CA of PHEIs (Path coefficient = 0.524; P-value <0.10), hence H₁ is supported and accepted.

TABLE 5. Hypotheses

Path	Path Coefficient	P-values	R ²	Results
Knowledge acquisition → Competitive Advantage	0.524	0.000		Supported
Knowledge acquisition → Product Development Capability	0.550	0.000		Supported
Product Development Capability → Competitive Advantage	0.328	0.088		Supported
Knowledge acquisition → Product Development → Competitive Advantage	0.181	0.096	0.608	Supported

Significant at 10% (P<0.10)

H₂ tested the effect of KA on PDC of PHEIs in Pakistan. KA has significant effect on PDC of PHEIs (Path coefficient=.550; P value<0.10). Thus, the current study accepts the H₂. Similarly, H₃ tested the effect of PDC on CA in PHEIs of the country. Result showed that PDC has a significant positive effect on CA (Path coefficient = 0.328; P-value <0.10). Therefore, H₃ is also accepted accordingly.

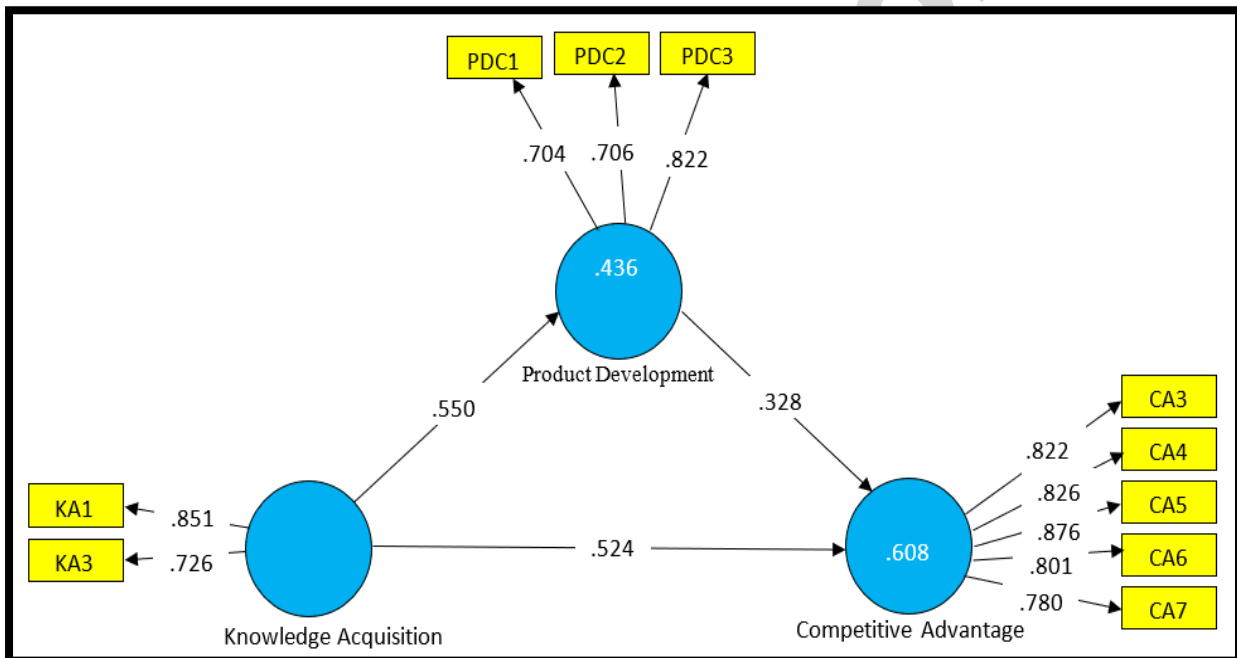


FIGURE 2. PLS results

The mediating effect of PDC in the relationship between KA and CA proved to be significant, as hypothesized in H₄ (Path coefficient = 0.181; P-value <0.10). H₄ is therefore accepted. Further, R² of the model is 0.608, which is moderate (Hair et al. 2014). The findings also revealed one important element in that the direct relationship between KA and CA is found to be stronger as compared to the indirect mediation of KA, PDC and CA in the PHEIs of Pakistan. The possible rationale that can be suggested is that the PHEIs of developing countries are generally less innovative and productive in terms of offering new courses, programs and syllabi (Durkin et al. 2016). The PHEIs are moreover highly centralized organizations that may render minimised participation of the faculty who may have been trained in various universities and thus acquired additional knowledge on a wide variety of syllabi, courses and programs. The study proved that the direct path of KA and CA shows a stronger relationship relative to the indirect mediation path of KA, PDC and CA in the PHEI subsample.

DISCUSSIONS

The basic objective of this study was to examine the mediating effect of PDC between the relationship of KA and CA in the PHEIs of Pakistan. H₁ revealed that KA is a strong predictor of CA and both are bound in a strong relationship. The results indicate that to achieve CA in the higher education industry, which is becoming increasingly competitive, PHEIs should focus on KA through external linkages. KA would enhance the knowledge repository of the PHEIs that would ultimately enhance the skills and capabilities of their employees thus facilitating the acquisition of CA. The findings from H₁ is consistent with Jyoti et al. (2015) who postulated that KA highly influences the CA. As a service provider it should capture external knowledge and take cognizance of its competitors, customers, and government policies. Similarly, Wu and Chen (2012) argued that an organization's competitiveness is largely dependent on external ties forged by its leaders and thereby source new knowledge for the organization that may contribute to attaining CA over its rivals. In addition, Urbancova (2013) also provides more coherent arguments consistent with those of the present finding; namely, that KA is a strong predictor of CA since it contributes to enhancing existing knowledge in employees that will ultimately assist them in producing unique products and services. Argote and Ingram (2000) further asserted that KA is a vital source of CA since it stimulates and enhances the learning process of an organization that would create inimitability of the tacit knowledge gained and that would consequently elevate its competitiveness.

H₂ established that KA has a significant positive effect on PDC in PHEIs of Pakistan. The institutions may be able to offer new and unique courses, syllabi and programs as these will enhance KA. The finding is consistent with Liao and Barnes (2015) who maintained that KA is a social interaction process through which the public exchange knowledge that may lead to manufacture product-based innovation. Zhang and Zhu (2020) also stated that acquiring external knowledge is crucial for organizational innovation, particularly in product development. Further, result from H₃ revealed that PDC significantly and positively affects CA in PHEIs of Pakistan. The finding can be expanded and interpreted further to mean that new product development capability, in terms of offering new and unique courses, syllabi and programs, by the PHEIs would lead to providing CA in the education industry. The result is also in line with those of some earlier studies such as Goksoy et al. (2013).

The result from H₄ indicated that PDC significantly and positively mediates the relationship between KA and CA in PHEIs of Pakistan. The finding corroborates results from Liao et al. (2011) who asserted that through KA, organizations can achieve CA. However, they need to focus on their product innovation capability. Akroush (2012) argued that acquiring new knowledge on customers may lead to new product as derived from development-based CA. Close relationship with customers is obligatory in acquiring new knowledge and insights that enable the organisation to anticipate changes in customers' preferences (Joshi & Sharma 2004) thus invaluablely contribute to CA (Oh & Rhee 2010).

THEORETICAL IMPLICATIONS

The present study provides several theoretical implications. Firstly, it has drawn a conceptual framework based on the RBV. Past literature indicates that implementation of RBV is elusive in the context of public sector institutions (Bobe & Kober 2015), particularly public HEIs (Akram & Ahmad 2021). Therefore, this study may contribute to the existing literature by drawing a conceptual framework based on the RBV, to accentuate and motivate the current debate around the acquisition of CA in PHEIs. This study is also one of the very few that empirically examines the concept of CA in PHEIs given that the majority of the earlier studies were largely focused on private HEIs (Lo & Tian 2019; Mahdi et al. 2019). Further, the KA-CA nexus has also been widely examined in prior literature, but this study is among the few to empirically examine the product development capability of the nexus as a mediator. This study thus fills the theoretical knowledge gap in product development capability between KA and CA in public HEIs.

PRACTICAL IMPLICATIONS

Based on findings of this study the top management and practitioners of PHEIs in Pakistan should take various initiatives to foster KA in order to attain CA through the PDC. The PHEIs should strive to acquire new knowledge from external sources through collaborations with other universities (foreign and local). Further, they should forge strong ties with the industry to foster awareness of current developments. The top management should focus on various cultural exchange programs, including split-half study programs for students, in order to produce beneficial results. They should also pay attention to development programs for the faculty that can assist them and the university as a whole to acquire new knowledge. The study further implied that PHEIs should endeavour to acquire new and unique knowledge from external sources to enhance their PDC through offering new courses, unique programs and industrial-driven courses to the students. KA plays a vital role in such initiative since it motivates organizations to forge strong ties with the external sources. KA is basically a social process which can mediate for PHEIs to learn, adapt and implement the systems, values, and structure of the various external sources.

For the advancement of PDC in Pakistan it is indeed pertinent to offer new courses, syllabi, and programs in line with the requirement of industry and international standards. Unfortunately most PHEIs are unable to meet such requisites due to the lack of funding, weak cultural values and highly centralised and formalized culture. PHEIs need to reorient the entire mechanism in its delivery and servicing system in education in order to enhance its PDC, since all its internal organizational components such as culture, structure, funding and leadership are interrelated. This study suggested that PHEIs can enhance their CA by advancing their syllabi. And for this purpose a collaboration between academia and industry is necessary. The universities can offer new courses which will best fit the needs of industry which may eventually lead to enhancing its CA. Collaboration with industry may assist in unique course developments, such as making student practical training and experience compulsory or in requiring them to develop business plans in entrepreneurial exercise. Such innovative approaches may attract more student enrolment thus making higher educational institutions more competitive in the market.

CONCLUSION

The basic objective of the paper was to examine the mediating effect of PDC in the relationship between KA and CA. The empirical results supported the acceptance of the proposed hypotheses. The application of business concepts in the higher education industry of Pakistan is relatively new. However, it is of immense importance due to the growing commoditization of higher education in the country and accompanying competition among PHEIs to attract new customers (students). Based on the analysis of empirical data the study recommended that the PHEIs in the country should focus on more KA sources to achieve CA. And most importantly, they should endeavour to offer innovative programs, syllabi, and courses to the students.

There are a few limitations that can be identified in this study that may hinder PHEIs in achieving CA. Firstly, since the study was basically confined to public HEIs the findings may not be entirely applicable to the private HEIs. Secondly, the study was purposely confined to the public sector universities due their widest outreach compared to their private counterparts. Again, the applicability of the results on HEIs for the whole country is thus questionable. Thirdly, due to the strategic nature of the study, the survey response was only sourced from the vice-chancellors of participant PHEIs. They may not sufficiently reflect the diversity of opinions on the study variables proffered in the survey. As such the general applicability of the study results may also be conjectural.

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