

## Influence of Innovation in Education: Mediation of knowledge transfer

Siti Nurellyza Suria Ab Rahim<sup>1</sup>, Nor Lelawati Jamaludin<sup>2\*</sup>, Abu Ali<sup>3</sup>, Siti Salwa Isa<sup>1</sup>

\* Corresponding Author

<sup>1</sup> Institute of Post Graduate, UiTM, Shah Alam, Malaysia

<sup>2</sup> Department of International Business and Management Studies, UiTM, Puncak Alam, Malaysia

<sup>3</sup> Department of Industrial Design, College of Creative Arts, UiTM, Shah Alam, Malaysia

nurellyzasuria@gmail.com, norlelawati0019@uitm.edu.my, abuali@uitm.edu.my, sitisalwa@uitm.edu.my  
Tel: +60-011-1686-9649

### Abstract

Considering knowledge transfer functions as a mediating factor, this study discusses how administrative employees execute innovation in education through absorptive capacity and psychological empowerment. SPSS25 was used to analyse the data. Based on the findings, knowledge transfer mediates the links between two innovation-related concepts: (1) absorptive capacity and innovation capability; and (2) psychological empowerment and innovation capability. The creation of an adapted model of "absorptive capacity," "knowledge transfer," "psychological empowerment," and "innovation" in the field of psychology signifies the contribution of the current body of knowledge related to the education industry.

Keywords: innovation; education, knowledge transfer

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### 1.0 Introduction

Globally, the education sector is crucial to enhancing a country's development. An education system is a powerful tool for boosting a nation's competitiveness abroad in the face of ever-evolving globalisation. Universities and industries should collaborate to form educational outputs that match industry needs, (Prihandono, Wijaya, Wiratama, Wijayanto, & Suhud, 2022).

Education affects a society's intellectual, moral, and economic potential by enhancing individual knowledge and abilities. Malaysia was prepared to accept innovations in all areas as it embraced the National Innovation Policy. The goal of the 11th Malaysian Plan was to create wealth through innovation, (Supermane, 2019).

Malaysia's focus on the education sector is a foundation for realizing the economic revolution based on innovation, (Supermane, 2019). The results of this creative work in the form of innovation will encourage and increase capacity building for graduates, (Prihandono, Wijaya, Wiratama, Wijayanto, & Suhud, 2022).

Knowledge creation is one of the most relevant outputs of knowledge transfer activities and refers to new knowledge in terms of new products, processes, skills or capabilities resulting from the combination of existing knowledge, (Filiari & Alguezaui, 2014). In universities, like in any other workplace, empowering human resources is believed to be the key element in the success and achievement of such higher educational institutions, (Abdulrab, et al., 2018).

According to research by (Grošelj, Černe, Penger, & Grah, 2021), found that psychological empowerment moderates the relationship between leadership and innovative work behaviour. However, little has been done so far in studying the boundary conditions on the

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relationships between stimulating innovative work behaviour through the moderating role of psychological empowerment, (Grošelj, Černe, Penger, & Grah, 2021). Every company management needs to improve its capacity to uncover and incorporate innovative, creative business concepts in order to advance economically and commercially.

Ramayah, Soto-Acosta, Kheng, & Mahmud (2020) deduced the hypotheses concerning the relationships between firms' experience and the entire three dimensions of absorptive capacity, namely, knowledge acquisition, knowledge dissemination and knowledge utilization. Industries must take advantage of the knowledge and experience of other economic actors in order to succeed in a world of barriers and obstacles and rapid technological change.

The authors think that this attempt could accomplish more by not only delving into but also adopting a fresh viewpoint that is frequently disregarded by researchers even though their concepts might mark a critical juncture for the industry. Given that this study is being conducted in the education industry, which is a knowledge-intensive setting with high amounts of social engagement, this is crucial.

Therefore, it is justified to do research on the knowledge transfer that mediates the relationship between absorptive capacity, psychological empowerment, and innovation, as the holistic view is still insufficient. This additional information should enable researchers to assess the probable effects of psychological empowerment and knowledge transfer, providing the groundwork for further investigation into the connection between absorptive capacity and innovation. Hence, it is justified why the research is prevalent to be conducted.

## 2.0 Literature Review

Companies can have innovation in the areas such as generating new products, developing new sales markets, re-engineering the process and reorganising of the company, (Schumpeter, 1934). An increased focus has been placed on innovation as a major force behind sustainable economic development, as well as on the nature and sources of innovation, as a result of the opportunities and constraints presented by globalisation and technological advancement.

Higher education institutions should be improved so that innovation becomes ingrained in the culture and activities have taken on a daily basis by all students, staff, and faculty. Interaction with other faculty members also shapes the staff's knowledge of innovation and their approach to it. The cooperation that exists between industry and higher education is beneficial regarding the aspect of creating innovation and brings economic benefits to the industry, (Prihandono, Wijaya, Wiratama, Wijayanto, & Suhud, 2022).

When matters of innovation are discussed it is often absorptive capacity will follow suit. Firms that introduce innovations, which are based on external knowledge, necessarily have the ability to exploit knowledge from external sources, thus evincing absorptive capacities, (Ramayah, Soto-Acosta, Kheng, & Mahmud, 2020).

In order to survive, expand constantly, and respond to external challenges and pressures, higher education organisations must be able to manage organisational learning processes. Hence, absorptive capacity is a source of competitive advantage through innovation, (Ramayah, Soto-Acosta, Kheng, & Mahmud, 2020).

In order to streamline current innovation models and investigate efficient information transfer strategies that can increase knowledge recipients' ability for assimilation, more study is required. (Mariano & Walter, 2015) pointed out that the absorptive capacity of an educational institution has been largely underdeveloped.

Furthering the thesis to a deeper spectrum, psychological empowerment will also be discussed in this research. Psychological empowerment needs to be understood as a motivational construct based on an employee's perception of the ability to perform the work well, the choice of originating and regulating actions, impacting the environment, and the job having meaning, (Grošelj, Černe, Penger, & Grah, 2021).

Psychological empowerment refers to a sense of control in relation to employees' work and is considered an intrinsic motivation to perform their work efficiently and effectively, (Spreitzer, 1995). Little research has, however, been done in the past about the boundary conditions on the relationships between encouraging innovative work behaviour and psychological empowerment, (Grošelj, Černe, Penger, & Grah, 2021).

Knowledge transfer can be defined as a process of how people learn through the transformation of knowledge, (Nonaka, Takeuchi, & Umemoto, 1996). Knowledge transfer is believed to be the missing link between psychological empowerment and absorptive capacity pertaining to innovation.

A firm can improve its strategic, innovative and marketing abilities through the proper creation, storage and effective dissemination of knowledge, (Chatterjee, Pereira, & Bates, 2018). However, to date, no systematic review has been carried out on the role that structural SC plays in knowledge transfer and innovation at the interpersonal, inter-unit and inter-firm levels, (Filiari & Alguezaui, 2014) including education sectors.

### 2.1 Knowledge Transfer mediates the relationship between Psychological Empowerment and Innovation

The knowledge-sharing process is conceptualized as a structured process where the employees of the firms mutually exchange knowledge, (Chatterjee, Pereira, & Bates, 2018). They need to gather data on the rapidly changing markets, as well as on developments and technological advancements. There are various ways to knowledge management. Knowledge is to be captured, created, shared, utilized and eventually to be applied, (Chatterjee, Pereira, & Bates, 2018).

One proposition for research is to undertake an analysis of the influence of strong ties at both the intra-firm and inter-firm levels on the effectiveness of knowledge transfer, which in turn affects innovation performance at both levels, (Filiari & Alguezaui, 2014). (Helmy, Adawiyah, & Banani, 2019) confirmed that knowledge transfer mediates the relationship between psychological empowerment and innovation.

### 2.2 Knowledge Transfer mediates the relationship between Absorptive Capacity and Innovation

Today's competitive world has developed a never-ending desire in organizations to be more efficient and productive in terms of resources to gain a competitive edge over their rivals, (Chatterjee, Pereira, & Bates, 2018). For individual's common life and the economic, social and cultural policies of nations, groups of countries and even borderless realities are influenced by the forms of access, production, distribution and application of knowledge, (Agostineto, Soares, Mazon, & Soares, 2022).

Users' ability to apply knowledge can be increased by sharing activities across departments, teams and the organization, (Agostineto, Soares, Mazon, & Soares, 2022). (Lo & Tian, 2020) emphasises how absorptive capacity may have a mediation role, changing how the organisational innovation on the extent of knowledge transfer.

## 3.0 Methodology

### 3.1 Sample and Procedure

In accordance to (Burmeister & Aitken, 2012) sample size is one aspect of study design that researchers need to remember when they prepare their research. Producing results that are both clinically and statistically significant and ensuring the efficient and ethical use of study resources are two reasons for accurately determining the required sample size. There are 2,709 administrative personnel working in UiTM Shah Alam during this research was conducted.) Minimum sample required needed is 393. A list of the administrative staff of UiTM Shah Alam provided the responses. The data were analyzed using the Statistical Package for Social Science 25 (SPSS25). Based on the levels of agreement with the various aims, the assumption test was used to determine whether responses were significant.

### 3.2 Measure of the variable

The entire variables were measured by using a five-point Likert scale format. (Mitchell, van den Land, & Levy, 2018) studies have generally shown that five-to seven-point scales of measurement can improve its reliability and validity.

## 4.0 Results and Discussion

### 4.1 Demographic

The descriptive analyses of respondents' demographic data were also carried out by the researcher using SPSS. Gender, age, marital status, educational level, and employment base are all factors to consider. The analyses as in Table 1 below.

Table 1: Demographic

Demographic Variable	Categories	Frequencies	Percentage (%)
Gender	Male	176	44.8
	Female	217	55.2
Age	Less than 30 years	87	22.1
	30 – 40 years	204	51.9
	40 – 50 years	64	16.3
	50 years and above	38	9.7
Marital Status	Single	108	27.5
	Married	283	72.0
	Others	2	0.5
Education Level	PMR	6	1.5
	SPM	104	26.5
	STPM	14	3.6
	Diploma	89	22.6
	Degree	111	28.2
	Masters	65	16.5
Employment Basis	PHD	4	1.0
	Full – time	351	89.3
	Part – time	11	2.8
	Contract	10	2.5
	Internship	21	5.3

#### 4.1.1 Descriptive Statistic

To measure variability researchers, opt for Mean and Standard Deviation. The independent and mediating variables of absorptive capacity, knowledge transfer, and psychological empowerment were used. Individuals/respondents generally choose from five alternatives which range from 1 to 5, with 1 strongly disagree, 2 disagree, 3 indicating neutrality, 4 agree, and 5 strongly agree. The same application is used for dependent variables in the range measurement. Results in Table 2 indicate a high mean score for Innovation at 3.658. While independent and moderating variables which are absorptive capacity, knowledge transfer and psychological empowerment also indicated a high mean score of 3.438, 4.183 and 4.022 respectively. Further, the standard deviation of all values can also be considered acceptable.

Table 2: Descriptive Statistic

Variables	Mean (M)	Standard Deviation (SD)
Absorptive Capacity	3.438	0.604
Knowledge Transfer	4.183	0.501
Psychological Empowerment	4.022	0.742
Innovation	3.658	0.683

#### 4.2 Hypotheses Testing

##### 4.2.1 PROCESS macro-Hayes for H1

The mediation analysis, Andrew Hayes's PROCESS macro, was used to examine the effect of absorptive capacity (X-variables) on the innovation capability (Y-variable) mediates by knowledge transfer (W-variable) to analyse the first hypothesis of this study. The results of the analysis are explained further below in details. The results in Table 3 shows that  $F(3, 92) = 58.771, p < .001, R^2 = .657$ . This meant that 65.7% of the variance was due to knowledge transfer.

Table 3: Model Summary using Andres Hayes's PROCESS Macro

	R	R Square	MSE	F	df1	df2	p
1	.8106	.657	.555	58.771	3.000	92.000	0.000

Table 4: Result of PROCESS macro Hayes for H1

Variable / Effect	b	Se	t	p	95% Confidence Interval	
AC ▾ I	.0426	.2190	.1946	> .001	.477	.391
AC ▾ KT	.0529	.0547	.9669	> .05	.056	.161
AC ▾ KT ▾ I	.0048	.0234	.2740	.000	.042	.051

\*AC: Absorptive Capacity; KT: Knowledge Transfer; I: Innovation

Table 5: Effects

Direct	.0529	.0547	.9669	<.05	.0555	.1613
Indirect	.0002	.0047			.0128	.0077
Total	.0527	.0545	.9674	.00	.0552	.1606

Based on Table 4, first, the results of the regression analysis show that the independent variable, absorptive capacity was not a significant predictor of innovation capability ( $b = .0426, t = .1946, p > .001$ ). Next, while controlling for knowledge transfer (mediator), the results of the second regression analysis also show that the independent variable, absorptive capacity was not a significant predictor of

knowledge transfer ( $b = .0529, t = .9669, p > .05$ ). However, when mediator was included, the relationship between absorptive capacity and innovation capability is significant ( $b = .0048, t = .2740, p = .000$ ).

Moreover, in Table 5, there was also statistically insignificant direct effect between absorptive capacity and innovation capability ( $b = .0529, t = .0547, p < .05$ ). However, the results of the indirect effect based on 5000 bootstrap samples show a significant indirect relationship between absorptive capacity and innovation capability mediate by knowledge transfer ( $a*b = .0002, Bootstrap = .0128$  and  $.0077$ ). Thus, it can be concluded that H1: Knowledge transfer mediates the relationship between absorptive capacity and innovation capability in the education industry in Malaysia is accepted.

4.2.2 PROCESS macro-Hayes for H2

The mediation analysis, Andrew Hayes's PROCESS macro, was used to examine the effect of psychological empowerment (X-variables) on innovation capability (Y-variable) mediates by knowledge transfer (W-variable) to analyze the second hypothesis of this study. The results of the analysis are explained further below in detail. The results in Table 6 shows that  $F(3, 92) = 56.66, p < .001, R^2 = .757$ . This meant that 75.7% of the variance was due to knowledge transfer.

Table 6: Model Summary using Andres Hayes's PROCESS Macro

	R	R Square	MSE	F	df1	df2	p
1	.800	.757	.515	56.661	3.000	92.000	0.000

Table 7: Result of PROCESS macro Hayes for H2

Variable / Effect	b	Se	t	p	95% Confidence Interval	
PE ▾ I	.0413	.2091	.1845	> .001	.4667	.3712
PE ▾ KT	.0428	.0546	.9615	> .05	.0565	.1512
PE ▾ KT ▾ I	.0075	.0231	.2787	.000	.0413	.0611

\*PE: Psychological empowerment; KT: Knowledge Transfer; I: Innovation

Table 8: Effects

Direct	.0519	.0557	.9719	> .05	.0555	.1613
Indirect	.0003	.0047			.0127	.0078
Total	.0527	.0545	.9674	.000	.0552	.1606

Based on Table 7, first, the results of the regression analysis show that the independent variable, psychological empowerment was not a significant predictor of innovation capability ( $b = .0413, t = .1845, p > .001$ ). Next, while controlling for knowledge transfer (mediator), the results of the second regression analysis also show that the independent variable, psychological empowerment was not a significant predictor of knowledge transfer ( $b = .0428, t = .9615, p > .05$ ). However, when mediator was included, the relationship between psychological empowerment and innovation capability is significant ( $b = .0075, t = .2787, p = .000$ ).

Moreover, results in Table 8 show that there was also a statistically insignificant direct effect between absorptive capacity and innovation capability ( $b = .0519, t = .0557, p > .05$ ). However, the results of the indirect effect based on 5000 bootstrap samples show a significant indirect relationship between absorptive capacity and innovation capability mediate by knowledge transfer ( $a*b = .0003, Bootstrap CI95 = .0127$  and  $.0078$ ). Thus, it can be concluded that H2: Knowledge transfer mediates the relationship between psychological empowerment and innovation capability in the education industry in Malaysia is accepted.

5.0 Conclusions

As hypothesized, a positive and significant outcome was found when testing the possible mediating effect of knowledge transfer on the relationship between absorptive capacity and psychological empowerment and innovation capability similar to, (Cheng & Eric, 2020). The

research indicated that knowledge transfer mediates the linkages between psychological empowerment, absorptive capacity, and innovation in Malaysia's education sector.

### 5.1 Implications

Researchers believed the findings obtained will alleviate the existing framework involving innovation in education by providing information on knowledge transfer as mediating role. Additionally, this study offers recommendations for practitioners, particularly in educational institutions.

### 5.2 Limitations and Suggestions for Future Research

This research came across a few limitations which could be improved in the future. The first limitation comes from the fact it uses a cross-section method which put buffers into proving the causal relationship. Second, this study relies heavily on the Malaysian context. Different cultures, environments, and work settings may propagate different findings.

Hence, research on innovation, psychological empowerment, absorptive capacity and knowledge transfer as mediating roles should be further explored.

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