# KNOWLEDGE CREATION AND TRANSFER USING THE SECI MODEL AND LMX THEORY: A TEACHER-STUDENT EXCHANGE (TSE) PERSPECTIVE

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## Abstract

This research investigated the influence of teacher-student exchange and SECI model on the higher institutions students' academic performance and preparedness for the workplace. Using a sample size of 214 business education students drawn from 6 programmes, the hierarchical multiple regressions was used to show relationships based on the variables. The statistical analysis showed that only age of the students had a significant relationship with the dependent variables. Externalisation and internalisation influenced students' preparedness for the work place, while teachers-student exchange and socialisation had significant effects on students' academic performance. The study recommended that teachers in higher institutions should enhance students' capacity to interact continuously in ways that exploit tacit-explicit knowledge interactions and explore explicit-tacit knowledge interactions. Moreover, students should be helped to understand that performing excellently academically and being prepared for the workplace is a continuous chain of activity that ordinarily should not be broken.

**Keywords:** Knowledge creation, Knowledge exchange, Leader-member exchange, Teacher-student exchange, SECI model

## 1 INTRODUCTION

Higher institutions are recognised to be centres for knowledge creation and transfer, especially with respect to knowledge that transforms society and enhances value. The value which higher institutions add to society

can be determined by the extent of intellectual contribution which their products, such as graduating students, make to the organisations that hire them and the social circles that they identify with (Ogbodo, Efanga & Ikpe, 2013). Therefore, knowledge creation and transfer, both among students and from lecturers to students play a prominent role in preparing the students for the place of work. These knowledge based interactions are relevant, especially within higher institutions to produce new knowledge and graduates that can contribute significantly to the place of work (Ojo, 2016).

Despite that the socialisation, externalisation, combination and internalisation (SECI) model of knowledge creation and transfer proposed by Nonaka and Takeuchi (1995) has been widely discussed in organisational knowledge research (Ohiorenoya & Eboreime, 2014, Markus & Yanquing, 2012), yet little empirical evidence exist about its role within the higher institution context. Moreover, given that knowledge-based interactions, such as the creation and transfer of knowledge, is based on absorptive capacity, trust and individual demographic characteristics (Kharabsheh, 2007), the need to understand knowledge creation and transfer based on a mutual exchange perspective becomes significant. The Leader-member exchange theory has been a well-grounded theory in organisational research that facilitates understanding of interactions between managers and supervisees from a relationship based perspective (Olutade, Liefooghe & Olakunle, 2015; Power, 2013). Thus, the LMX theory can be situated within higher institutions to demonstrate a knowledge based interaction between teachers and students. Therefore, this research is focused on examining the tenets of the SECI model and the LMX theory on knowledge creation and transfer in higher institutions. This knowledge-based interaction is conceptualised as the teacher-student knowledge exchange (TSKE).

## 2 LITERATURE REVIEW

### 2.1 The SECI Model of Knowledge Creation and Exchange

Nonaka and Takeuchi's (1995) SECI (socialisation, externalisation, combination and internalisation) model suggest that organisational knowledge, especially the tacit and explicit knowledge, can be created, converted and exchanges among group of individuals through four major processes that includes socialisation, externalisation, combination and internalisation. The fundamental aim of the SECI model is to establish a platform that ensures effective utilisation of knowledge from an individual to a wider organisational possession to achieve organisational or group members' common interest. Socialisation is the process of exchanging tacit knowledge among organisational members; externalisation creates and exchanges explicit knowledge from tacit knowledge; combination involves the exchange of explicit knowledge, while internalisation exchanges and creates tacit knowledge from explicit knowledge (Nonaka, 1994).

Although empirical research using the SECI model, especially in the higher institution educational industry is not very common in existing literature (Haag & Duan, 2012), the importance of the model to enhancing new knowledge creation and exchange from teachers to students and among students as a means of enhancing the preparedness of students for the workplace has been emphasised (Sangeeta, 2015).

### 2.2 The LMX Theory

The Leader-Member theory, that has grown beyond the originally proclaimed vertical dyad linkage (VDL) as propounded by Dansereau, Graen and Haga (1975) is used to describe the extent to which desirable relationships between leaders and subordinates can influence higher levels of interest and commitment from subordinates, and thus enhance their satisfaction with and performance on the job (Olutade, Liefooghe & Olakunle, 2015; Venkat, 2005). The LMX theory has been studied in relation with mentoring and organisational commitment, to show that a combine effect of psychological mentoring and the LMX elements can enhance affective and normative commitment of employees (Leow & Khong, 2009). More so, LMX has been discussed within the context of higher educational institutions as a means through which organisational leaders can inspire the followership of subordinates in goal oriented directions (Power, 2013).

As with the relationship between organisational leaders and subordinates, the tenets of LMX theory, such as affect factors between leaders and subordinates, contributions of the leader towards the followers' growth, professional respect and loyalty (Leow & Khong, 2009), can also be applicable to the teacher-student relationship. Mosley, Broyles & Kaufman (2014) examined the Leader-Member exchange and established the role of dyadic intensity in enhancing the quality of teacher-student relationship. The perceptions about in-group and out-group relationships have also been shown to be important determinants about students'motive to communicate with their teachers in the teacher-student relationship (Myers, 2010).

## 2.3 Determining a Teacher-Student Knowledge Exchange (TSKE) Perspective

The teacher-student knowledge exchange (TSKE) is a concept that combines the assumptions of SECI knowledge creation and exchange with the LMX theory as a means to explaining knowledge creation and sharing in an academic environment, especially in higher institutions. Socialisation in the knowledge exchange process transforms tacit knowledge through social interactions, such as students' meetings outside the traditional classroom settings (Nonaka & Toyama, 2003). It can also include intellectual interactions through which lecturers share their work related and life applicable experiences with students within and outside the classroom. Basically socialisation is the exchange of tacit knowledge from a person who has it, to another who desires to possess similar, or the same kind of tacit knowledge. Externalisation involves the creation of explicit knowledge from someone who has tacit knowledge. For example, in the teacher-student or the student-student intellectual interactions, the one who has the tacit knowledge can aid the conversion of that knowledge by permitting that the other party documents every detail of his shared experiences in writing (Bratianu & Orzea, 2010).

Combination involves the exchange of explicit-explicit knowledge both from teacher-students and among students themselves. Just like organisations use partnerships and networking to promote knowledge exchange through combination, teachers and students can also form network that promote explicit knowledge creation and exchange as a means of generating new knowledge (Mcdougall-Covin & Shepherd, 2009). However, Zahra and George (2002) opined that higher absorptive capacity is an important requirement for explicit knowledge exchange. Internalisation, on the other hand, involves the exchange of explicit knowledge to tacit knowledge. Students can achieve this by their practical engagement of the explicit knowledge that they acquire from their teachers and other student colleagues (Nonaka & Toyama, 2003).

## 3  METHODOLOGY

Descriptive survey research design was adopted for this study. The population of the study comprises of 1,100 Business Education students studying Accounting, Banking and Finance, Business Administration, Economics, Human Resource Management and Marketing Courses. However, a sample size of 214 respondents was determined for the research work, based on Yamen (1968). The respondents were drawn from two Nigerian private Universities, namely: Covenant University and The Bells University of Technology. Copies of structured questionnaire were administered to the respondents as part of data gathered measures for the research work. The face and content validity of the research instrument was ensured by experienced knowledge management researchers and lecturers. The reliability of the research instrument was carried out using the internal consistency approach; the overall Cronbach alpha value of 0.923  was arrived at, thus, confirming the reliability of the research items.

### 3.1 Measures

The research topic for this study consist of three major variables, namely: innovation culture, knowledge sharing and preparedness of Business Education students for the work place. The development of questionnaire items for these three variables were drawn from existing literature. Items on innovation culture were drawn from Alm and Jönsson (2014), Padilha and Gomes (2016). Items that measured knowledge sharing were drawn from Sohail and Daud (2009). Items that were used to measure the preparedness of Business Education students   for the workplace were drawn from Junior Achievement (2013).

### 3.2 Reliability and Validity of the Scale Items

The reliability of the research items was ensured using the internal consistency method while the validity of scale items was carried out using construct validity. The reliability of scale items that are depicted in Table 1 below reveal that most of the items are above the threshold limit of 0.7. On the other hand, Tables 2 - 4 below shows the results from construct valibility. The Tables reflect the outcomes of convergent and discriminant validity based on the paths identified in the conceptual model of the research study. Based on the results in the table, the scale items satisfy conditions of convergent validity, because there are evidences on strong inter-item correlations among items of the same constructs, ranging from 0.436 – 0.696. On the other hand, discriminant validity among scale items of different constructs was evidenced by very low item-item correlations ranging from -0.40 – 0.586.

**Table 1: Result of Reliability of Scale Items**

| S/No | Scale | No of Items | Cronbach Alpha |
|---|---|---|---|
| 1 | Teacher Student Exchange | 12 | 0.836 |
| **SECI** | | | |
| 2 | Socialisation | 5 | 0.770 |
| 3 | Externalisation | 3 | 0.781 |
| 4 | Combination | 3 | 0.641 |
| 5 | Internalisation | 3 | 0.603 |
| | | | |
| 6 | Academic Performance | 5 | 0.874 |
| **Preparedness for the Workplace** | | | |
| 7 | Communication | 4 | 0.864 |
| 8 | Conceptual Skill | 3 | 0.540 |
| 9 | Analytical and Problem-solving Skill | 5 | 0.869 |
| 10 | Teamwork Related Skill | 3 | 0.844 |
| 11 | Leadership Skill | 4 | 0.858 |
| 12 | Interpersonal and Network Skills | 5 | 0.894 |
| 13 | Critical-thinking Skill | 3 | 0.883 |
| 14 | Curriculum Related Skills | 3 | 0.843 |

**Source: Ibidunni, Ibidunni, Olokundun and Akinbola (2017)**

## 4  RESULTS

Table 5 shows that 89 (41.4%) of the respondents are male while 125 (58.1%) are female. Also, the highest population of respondents  106 (49.3%) are between the ages  of 21-26 years, 103 respondents (47.9%) are of the age bracket 15-20 years, while only 5 respondents (2.4%) are between the ages 27-32 years. With respect to programme of study, 67 (31.2%) respondents are studying Economics, 63 (29.3%) respondents are studying Accounting, 36 respondents (16.7%) are studying Industrial Relations and HRM, 24 respondents (11.2%) are studying Marketing, 16 respondents (7.4%) are Business Administration students, while only 8 (3.7%) respondents are in the department of Banking and Finance.

**Table 5: Demographic Characteristics of Respondents**

| Demographic Variable | Respondents Category | Frequency (%) |
|---|---|---|
| Sex | Male | 89 (41.4) |
| | Female | 125 (58.1) |
| | **Total** | **214 (99.5)** |
| Age | 15 – 20 years | 103 (47.9) |
| | 21 – 26 years | 106 (49.3) |
| | 27 – 32 years | 5 (2.4) |
| | **Total** | **214 (99.5)** |
| Programme of Study | Business Administration | 16 (7.4) |
| | Marketing | 24 (11.2) |
| | Economics | 67 (31.2) |
| | Industrial Relations & HRM | 36 (16.7) |
| | Accounting | 63 (29.3) |
| | Banking & Finance | 8 (3.7) |
| | **Total** | **214 (99.5)** |

**Source: Field Survey (2017)**

**Table 6: Hierarchical Regression of Innovation Culture, Knowledge Sharing and Preparedness of Students for the Workplace**

|  | Preparedness for the Workplace | | | Academic Perforamnce | | |
|---|---|---|---|---|---|---|
|  | M1 | M2 | M3 | M4 | M5 | M6 |
| **Demographic Variables** | | | | | | |
| Sex | 0.097 | 0.093 | 0.130 | 0.144 | 0.153 | 0.146 |
| Age | -0.206* | -0.206* | -0.209* | -0.138 | -0.138 | -0.117 |
| Programme | 0.003 | 0.006 | 0.015 | 0.066 | 0.059 | 0.046 |
|  | | | | | | |
| Teacher Student Exchange | | -0.073 | -0.002 | | 0.152** | 0.095 |
|  | | | | | | |
| Socialisation | | | 0.086 | | | 0.175** |
| Externalisation | | | -0.124** | | | -0.012 |
| Combination | | | 0.042 | | | 0.031 |
| Internalisation | | | -0.131** | | | -0.073 |
| **R** | 0.181 | 0.192 | 0.268 | 0.205 | 0.237 | 0.271 |
| **R$^2$** | 0.033 | 0.037 | 0.072 | 0.042 | 0.056 | 0.073 |
| **$\Delta$R$^2$** | ------ | 0.004 | 0.035 | ------ | 0.014 | 0.017 |
| **F** | 2.341** | 1.981** | 1.954* | 3.024* | 3.059* | 1.995* |
| **Df** | 3 | 4 | 8 | 3 | 4 | 8 |

*p < 0.05, **p < 0.1

The statistical results show the regression relationships between teacher-student exchange, SECI variables, students' preparedness for the workplace and students' academic performance. Two independent variables were hierarchically regressed against two dependent variables. The dependent variables were inputted into the model at different times. The results depicts that only age, as a demographic variable had influence on students' preparedness for the workplace (model 1: β = -0.206; model 2: β = -0.206; model 3: β = -0.209; all significant at p < 0.05).  There are no significant effects between teacher-student exchange in higher institutions and preparedness of students for the workplace. However, in model three, externalisation (β = -0.124 p < 0.1) and internalisation (β = -0.131 p < 0.1) had significant relationships with students' preparedness for the workplace.

Models 4 – 6 show the relationship between teacher-student exchange and students' academic performance. Although the demographic variables did not have any significant relationship with academic performance, teacher-student exchange ((β = 0.152 p < 0.1) and socialisation (β = 0.175 p < 0.1) were revealed to influence academic performance.

## 5  DISCUSSION

This research study investigated the interactions between teacher-student exchanges, components of the SECI model, preparedness of students for the workplace and academic performance of students. Respondents were drawn from two private universities in Nigeria. Age was revealed to be an important determinant of students' preparedness for the workplace. This implies that students require the mature mind, physical, psychological and emotional stamina that are necessary to cope in the place of work. It also indicates that higher institutions have a significant role to play in ensuring that these maturity qualities that come with students' growth become a part of their training in the higher institutions. More so, the capability of students to interact on a basis that seeks to convert tacit knowledge to explicit knowledge and vice versa was also a significant part of preparing them for the place of work. This implies that students' generally demonstrate the clear divide between those who demonstrate intuitive reasoning over issues and those who seek to understand by reason of knowledge which they can see and easily relate with. Moreover, the intellectual interactions between these two groups of students is also established because the statistical results indicate that students basically relate based on their adoption of these two levels of knowledge. Thus, students continuously attempt to exploit their tacit knowledge, so as to create explicit knowledge, and they explore with their explicit knowledge so as to develop into tacit knowledge, as a means of influencing their preparedness for the workplace.

The results of students' academic performance showed that teacher-student exchange influence academic performance. This implies that students perceive their teachers as mentors that significantly help them to learn better and excel in their academics. Never the less, knowledge exchange among them showed a different result because only socialisation, which coverts tacit-tacit knowledge, was seen to influence students' academic performance. The results show that there might be clear differences in the way students perceive their academic activities in relation to their academic performances from how prepared they are for the workplace. this result may mean that the curriculum, teaching styles and patterns of communication during classroom teaching by the faculty members does not strongly create a link between students' performing excellently academically and how they can translate that performance into ensuring that they are really prepared for the workplace. It might mean that assessment should be more practical, to solve real problems confronting industries than theoretical. Overall, the results from both sides of the dependent variables seem to pass a signal that teacher-student exchange and all the four interactions in the SECI model of knowledge are significant to higher institutions, but depending on how efforts are channelled into helping students discover their relevance.

## 6  CONCLUSION AND RECOMMENDATION

The study investigated the interactions between teacher-student exchanges, components of the SECI model, preparedness of students for the workplace and academic performance of students. Students from two well pronounced private schools in Nigeria formed the respondents' base for the study. Both teacher-student exchange and the four dimensions of SECI model were significantly important to students' academic performance and their preparedness for the workplace, but on different levels of importance. It is recommended that teachers in higher institutions should enhance students' capacity to interact continuously in ways that exploit tacit-explicit knowledge interactions and explore explicit-tacit knowledge interactions. Moreover, students should be helped to understand that performing excellently academically and being prepared for the workplace is a continuous chain of activity that ordinarily should not be broken. Therefore, academic assessments while in higher institutions, for the students should be more practically inclined to solve industry problems.

## ACKNOWLEDGEMENT

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