

The Impact of Tacit Knowledge Capacity on Social Media: An Empirical Research on Physicians in North Cyprus

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Abstract: Tacit dimension of knowledge is still remaining as Black box in the knowledge management literature. While it is not a new concept, the sharing of tacit knowledge at the social media environment has recently been discussed in the last decades. There are mainly two important approaches on sharing and capturing the tacit knowledge. The first one is about the possibility of sharing tacit knowledge by using social networks tools. For example Hildrum (2009) and Lopez-Nicolas and Soto-Acosta (2010) mentioned that IT can trigger sharing of the tacit knowledge. The second one argues that it is almost not possible to share tacit knowledge by using IT tools. Sagsan (2003) argued that according to the mental models, transmission stage is problematic which includes common sharing and diffusion within an organization among stakeholders. Likewise, Flanagan (2002), Johannessen et al, (2001), Hislop (2001) and Haldin-Herrgard (2000) argued that though tacit knowledge sharing via IT is almost impossible. This paper argues that social media can be used effectively to increase the tacit knowledge capacity. As the people need to be contacted from their preferred medium of choice (Fill, 2011) it will be suitable to use social networks to share the tacit knowledge within organizations. The empirical part of this study concentrated on physicians in order to understand how the tacit dimension of knowledge capacity could be diffused or captured. Questionnaire had been conducted to 138 physicians who works in North Cyprus and the regression models indicates that Seniority of Employees and the Speed of Adaption of Innovation affects both Tacit Knowledge Accumulation and Tacit Knowledge Transfer.

Keywords: tacit knowledge capacity, tacit knowledge transfer, tacit knowledge accumulation, social network sites, physicians, North Cyprus

1. Introduction

'We are now living in a 'knowledge-based society' where knowledge is the source of the highest quality power' (Toffler 1990 cited in Nonaka et al, 2000). Information technologies (IT) is also crucial in the recent era. Thus, usage of IT for the tacit knowledge accumulation/transfer becomes important aspect where it can be a strategic advantage for a firm success and continuity (Tiwana, 2002). There are two schools of thought within the usage of IT for the transfer of the tacit knowledge. First view argues that usage of IT for tacit knowledge transfer (TKT) is almost impossible (Haldin-Herrgard, 2000, Hislop, 2001, Johannessen et al, 2001, Flanagan, 2002, Sagsan, 2003). This argument carried out before the spread of the social networks which is one of the most used communication tool of today's world (Fill, 2011). The second view considers the change in people's behaviour, where Hildrum (2009) and Lopez-Nicolas and Soto-Acosta (2010) argued that IT can be used for sharing the tacit knowledge. 'Physicians use expert knowledge in an effort to optimize decision-making' (Alshameri et al, 2015:549). For that reason, this research aims to examine the ways how the physicians transfer or accumulate the tacit knowledge capacity.

2. Literature review on tacit knowledge capacity

In this part literature related within the tacit knowledge will be examined under the concept of tacit knowledge capacity (TKC) which formed up by the TKT and the tacit knowledge accumulation (TKA). The first part will examine the TKT where the second part will focus on the TKA. The knowledge transfer and knowledge accumulation also can be perceived as knowledge donating and knowledge collecting (Cavaliere and Lombardi, 2015). In this study the term knowledge transfer used as transfer from tacit to explicit form which can also be called as 'crystallisation' whereas the term knowledge accumulation used for acquiring the explicit knowledge and converting it into tacit form to increase learning by doing aspect of the individuals (Nonaka et al, 2000). These two concepts can be grouped into the one category, called TKC.

2.1 Tacit knowledge transfer

TKT is one of the most difficult processes at all types of organizational settings. Cavaliere and Lombardi (2015) conducted that knowledge sharing is knowledge transfer activities which also includes social interaction. Furthermore, it is stated that the tacit knowledge is personal. It can be related to person's experience, learning

and know-how gained during period of time. As the individual's ability to tackle a problem will be personal, one of the factors of TKT will be personality (Polanyi, 1969). Available medium for transfer and the type of training is also important (Murray and Peyrefitte, 2007). Employees can gather the explicit knowledge via reports, manuals and transcripts. On the other hand, transfer of the tacit knowledge requires available medium to communicate where the 'dialoguing ba' can occur (Nonaka et al, 2000). Thus, the authors argue that social media can be used as an alternative medium for dialoguing, if the organisations do not have the available medium of transfer. As the tacit knowledge is personal, there will be ambiguity. For that reason, organisational culture which is the set of shared norms and values amongst organization's stakeholders (Cavaliere and Lombardi, 2015) and medium of communication is crucial for sharing of the tacit knowledge. The selection of the effective medium may decrease the ambiguity and can foster communication within stakeholders (Joia and Lemos, 2010). In addition, Joia and Lemos (2010) further stated that the transfer of the tacit knowledge will become difficult depending on how great it is. Thus it is expected that the physicians with great tacit knowledge capacity might have tendency to hinder their knowledge.

The tacit knowledge can be classified as personal experience and learning. Social networks are operating as the online identity of the user (Mansfield-Devine, 2012), therefore it is expected that there will be TKT via social networks. Joia and Lemos (2010) mentioned that tacit knowledge is gathered personally thus tendency of reflecting will depend to the individual. Authors further mentioned that managing time is important factor for the transfer of the tacit knowledge. As the knowledge is created in 'Ba' which can be interpreted as the time and space, interaction will be important during the knowledge creation and the transfer stage (Nonaka et al, 2000). Interaction of the individual will be related with social-cultural as well as psychological features of the person (Hall and Hall, 1990; Hofstede and Hofstede, 2005; Trompenaars and Hampden-Turner, 2011). Furthermore, the terms and jargon needs to be same for effective understanding of the knowledge which will be shared (Davenport and Prusak, 2003 cited in Joia and Lemos, 2010). This research will be conducted for the physicians, it is expected that there will be a common language among them. It can be argued that social networks are preferred medium of choice for the communication (Fill, 2011), which can trigger sharing of the tacit knowledge if the person is extroverted (Ross et al, 2009). '...to establish a consistent culture of knowledge sharing, the use of financial incentives such as substantial gratuities, wage increases, promotion and so forth are necessary' (Davenport and Prusak, 2003 cited in Joia and Lemos, 2010: 414). Likewise, Lin and Lo (2015) mentioned that rewards play an important part for the transfer of the tacit knowledge therefore the perceptions of physicians towards the reward structure will also be examined.

2.2 Tacit knowledge accumulation

In order to consider the importance of tacit knowledge in organizational settings, it is also required to underline the TKA which refers to another process of tacit knowledge concept. Smedlund (2008) argued that accumulation and usage of the tacit knowledge depends on the trust between the employees and affected by the social network within organizations. As it is mentioned earlier in this paper, knowledge perceived as an important power for individuals and organisations which may make individuals hinder their knowledge in fear of losing power (Sun and Scott, 2005). In addition, Sun and Scott (2005) further mentioned that psychologically safe environment for questioning and criticism is also a crucial factor. Lack of available environment to question and criticise may block generation of new ideas or increase individuals' reluctance to share. 'Many companies value the technical knowledge and the acquisition of knowledge, instead of sharing and disseminating it' (O'Dell and Grayson, 1998 cited in Joia and Lemos, 2010: 416). The statement highlights that perceptions of the top management is also important to enable accumulation of the tacit knowledge. Furthermore, selecting right and effective knowledge resources defined as 'knowledge selection' which saves cost and time for the organization and increases knowledge accumulation of the organization's stakeholders (Chang, 2008). Nonaka et al, (2000) mentioned that 'socialisation' is crucial and tacit knowledge becomes acquirable if the sender and the receiver spend time together for the SECI process. This study also mentioned that socialisation stage (transfer of tacit to tacit knowledge) occurs during the apprenticeship stage. Thus, it is expected that there will be tacit knowledge sharing from the senior physicians to the intern, if they generally have the habits of social network usage and high tendency for knowledge sharing.

As the trust is also another indicator for sharing the tacit knowledge (Joia and Lemos, 2010) physicians might prefer to share the information personally to their apprentices. For that reason, their tendency for sharing and acquiring the knowledge via private message will be also examined throughout the primary research. Professional competence is also an important factor for the TKA. 'Furthermore, a recipient with a high learning

motivation is more likely to absorb well and internalize the knowledge' (Zhang and Jiang, 2015: 284). Management's commitment towards knowledge management can also effect knowledge acquisition within the firm (Potgieter et al, 2013). The capability of knowledge accumulation formed up from; knowledge selection (decreasing time and cost due to effective resource selection), knowledge obtainment (triggering effective gathering of the management duties), knowledge establishment (knowledge-driven management activities), knowledge storage (knowledge within long and short term memory) and knowledge expansion (effective transfer of the knowledge within departments) (Chang and Lee, 2008).

3. The speed of adoption of innovation and seniority of employees

As it is known from the literature there is a high relationship between the Speed of Adoption of Innovation (SAI) and Seniority of Employees (SE). The SAI includes the organizational innovation and their speed of capacity to adopt and perform innovative and creative activities. Creativity is one of the most important aspects which affect SAI (Alwis and Hartmann, 2008). Attending professional seminars and trainings are crucial to review the recent concepts within the profession. Furthermore, leadership's openness which stimulates the organizational change also has positive relationship within SAI (Mellor, 2011). The budget and vision for the research and development can also trigger the SAI within the companies (Rogers, 1995). In addition, firms need to search for the innovative activities for increasing their knowledge accumulation features to keep up date with new conditions (Alguezaui and Filieri, 2010). Innovation can also be defined as 'a process involving the exchange of codified and tacit knowledge' (Patel and Pavitt, 1994 cited in Moustaghfir and Schiuma 2013:500). 'Management of tacit knowledge can be seriously hampered by narcissism and self-aggrandizement which are deeply rooted in individuals and institutions they build' (Bhardwaj and Monin, 2006: 82). As the statement highlights, seniority of the management and their attitudes towards knowledge management is another indicator. Tenure of the employee is crucial which may affect knowledge searching or providing (Lee et al, 2011). Likewise, reciprocal obligation (Lin and Lo, 2015) and empowerment, ambiguity tolerance of the employees affects the organizational culture, where the TKC will be affected (Sanz-Valle et al, 2011).

4. Methodology

The quantitative methodology had been used of this study. The population includes physician because this occupation requires having a huge capacity of tacit knowledge especially on using their treatment process as well as their operation techniques. 'With a perspective or dimension, necessary dialogues can be addressed and more intuitive tacit knowledge from medical expertise can be made available' (Alshameri et al, 2015:555) which motivates the authors to conduct the research on physicians. A questionnaire had been prepared based on the literature which contains 24 questions. Approval for the questionnaire had been taken from the Ministry of Health. The number of the hospitals both private and public sector in North Cyprus is 11. The study conducted only on physicians whose population is 330 registered by Cyprus Turkish Physicians Association. Only 138 respondents participated in the study. Primary research findings had been analysed in IBM SPSS Statistics 20 programme. As the following Figure-1, TKC belong the physicians could be categorized into two important units, TKA and TKT as dependent variables, SE, The SAI, Media Retrieval, Institution, Communication Frequency and Medium of Communication are considered as independent variables.

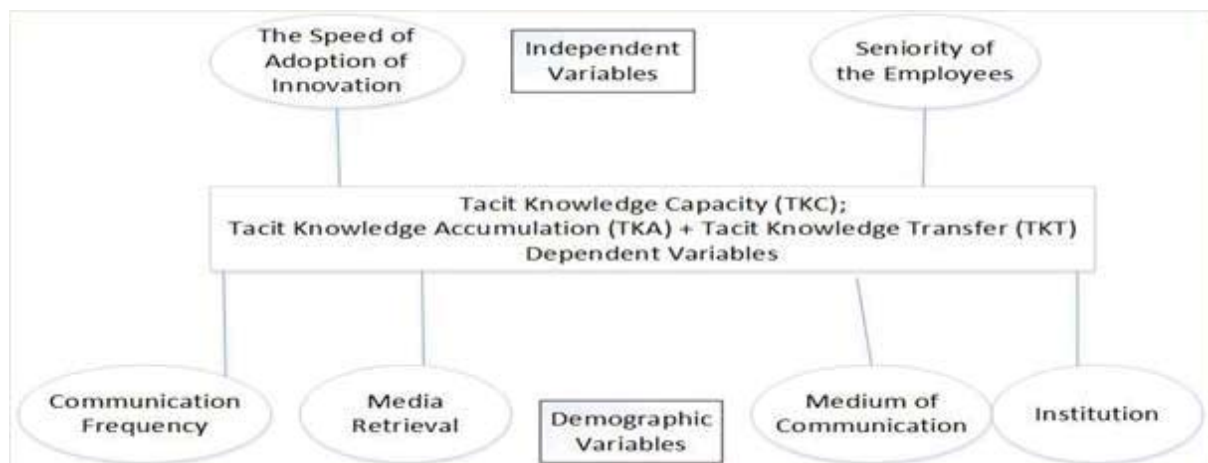


Figure 1: Representing research model

Problem statement: Although social media is one of the most used communication methods of the recent era, there is ambiguity about knowledge conversion in this medium. For this reason, it is almost impossible to identify the extent of the knowledge which is accumulated or transferred via social networks. Moreover, due to the high risk for knowledge conversion in this medium, the SAI cannot be identified clearly as well as SE. For example, the users in this medium are too free to accumulate/transfer the knowledge whenever they have access to the medium. This ambiguity prevents to understand the extent of the usage of tacit knowledge capacity via social networks.

The fundamental research question of the study emphasized as 'How the *physicians* 'Tacit Knowledge Capacity is being affected by the social media tools?' There could be produced two sub research questions.

Sub Research Question 1: How the physicians transfer the Tacit Knowledge by using the social media?

Sub Research Question 2: How the physicians accumulate the Tacit Knowledge by using the social media?

Based on the literature review it is argued that the below propositions could be designed under the 6 titles.

Hypothesis 1: The Tacit Knowledge Capacity is being positively affected by Seniority of the Employees.

Hypothesis 2: The Tacit Knowledge Capacity is being positively affected by the Speed of Adoption of Innovation.

Hypothesis 3: The Tacit Knowledge Capacity is being positively affected by the Institution.

Hypothesis 4: The Tacit Knowledge Capacity is being positively affected by the Communication Frequency.

Hypothesis 5: The Tacit Knowledge Capacity is being positively affected by the Media Retrieval.

Hypothesis 6: The Tacit Knowledge Capacity is being positively affected by the Medium of Communication.

Differ from the dependent and independent variables; Institution, Medium of Communication, Communication Frequency, and Media Retrieval are demographic variables. Institution asked to see whether the participant works in a public or private hospital. Medium of Communication assessed the participant medium for communication (Landline/Mobile Phone/ Mail/Electronic Mail/Physical Face to Face/Online Face to Face/Social Network/WhatsApp and Viber) and the participants' frequency of device usage (Do not use/Rarely Use/Neutral/High Usage/Always).

Communication Frequency asses the participants usage of the communication channels (Facebook, Twitter, LinkedIn, Instagram, Snapchat, Google+, YouTube and Email) and their usage frequency and include the options of 'More than once a day/once a day/two times in a week/once a week/twice weekly/monthly/never'. Media Retrieval assessing the frequency of participants' usage (Do not use/Rarely Use/Neutral/High Usage/Always) of the devices (Mobile Phone, Tablet, Laptop, PC) in order to access social networks.

4.1 Data analysis

The correlation among the independent variables is less than 70%. When the correlation analysis had been made it is seen that TKA variable has correlation with Institution (.253), SE (.344), the SAI (.348), Communication Frequency (-.307), Media Retrieval (.349) and with the Medium of Communication (.344) on 0.01 significant level. The correlation within the TKT and independent variables were; Institution (.354), SE (.370), the SAI (.418), the Medium of Communication (.235), Communication Frequency (-.367) and Media Retrieval (.104) on the 0.01 significance level. The models are significant by .000^b (ANOVA) where dependent variable TKA has Durbin-Watson statistic 2.014 and TKT has 1.745. R Square of the dependent variable TKA is 28.4 and dependent variable TKT is 31.1. Relationship within the dependent variables (TKA/TKT) and independent variables (Institution, SE, the SAI, Communication Frequency, Media Retrieval and with the Medium of Communication) had been checked based on the correlations.

Multicollinearity regression results can be seen from the table below;

Table 1: Representing multicollinearity regression

Models	Dependent Variable	Independent Variable	Tolerance	VIF	Standardized Coefficient (Beta)
Model 1	TKA	SE	.792	1.263	.192
Model 2	TKA	SAI	.639	1.566	.164
Model 3	TKA	Media Retrieval	.784	1.276	.196
Model 4	TKA	Medium of Communication	.741	1.350	.178
Model 5	TKA	Institution	.753	1.327	.058
Model 6	TKA	Communication Frequency	.701	1.426	-.054
Model 7	TKT	SE	.792	1.263	.211
Model 8	TKT	SAI	.639	1.566	.183
Model 9	TKT	Communication Frequency	.701	1.426	-.249
Model 10	TKT	Institution	.753	1.327	.171
Model 11	TKT	Media Retrieval	.784	1.276	-.111
Model 12	TKT	Medium of Communication	.741	1.350	.071

According to the results the following equations can be formed;

$$TKA = .657 + .096 * Institution + .148 * SAI + .280 * SE - .040 * Communication Frequency + .256 * Medium of Communication + .156 * Media Retrieval$$

$$TKT = 2.376 + .230 * Institution + .132 * SAI + .247 * SE - .150 * Communication Frequency + .082 * Medium of Communication - .071 * Media Retrieval$$

(See Appendix 1 for for Histogram, P-P Plot and Scatterplot)

5. Findings and discussion

According to the Regression Model 1, 2, 3, 4, 5 and 6 TKA is being affected by SE, the SAI, Media Retrieval, Medium of Communication, Institution and Communication Frequency on the one hand, Regression Model 7,8,9,10,11 and 12 TKT is being affected by SE, the SAI, the Communication Frequency, Institution, Media Retrieval and Medium of Communication on the other hand. All models are significant by the level of throughout the ANOVA model .000^b, as it is explained above.

Model 1

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, SE will be affected by .192, which supports Hypothesis 1.

Model 2

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, the SAI will be affected by .164, which supports Hypothesis 2.

Model 3

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, Media Retrieval will be affected by .196, which supports Hypothesis 5.

Model 4

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, Medium of Communication will be affected by .178, which supports Hypothesis 6.

Model 5

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, Institution will be affected by .058, which supports Hypothesis 3.

Model 6

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKA) and independent variables. When the TKA is upgraded by 1 unit, Communication Frequency will be affected by -.054, where the Hypothesis 4 has not been supported.

Model 7

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, SE will be affected by .205, which supports Hypothesis 1.

Model 8

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, the SAI will be affected by .184, which supports Hypothesis 2.

Model 9

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, Communication Frequency will be affected by -.220, where the Hypothesis 4 has not been supported.

Model 10

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, Institution will be affected by .171, which supports Hypothesis 3.

Model 11

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, Media Retrieval will be affected by -.111, where the Hypothesis 5 has not been supported.

Model 12

Effect of TKC had been analysed to see if there is relationship within dependent variable (TKT) and independent variables. When the TKT is upgraded by 1 unit, Medium of Communication will be affected by .071, which supports Hypothesis 3.

'The greater the tacit knowledge dimension the more difficult its transfer and sharing will be' (Joia and Lemos, 2010: 411). In spite of this statement, it is highlighted by Regression Models 1 and 7, TKC is affected within the SE which supports Hypothesis 1. For that reason, it could be mentioned that, the extent of the knowledge does not prevent physicians' TKC. This might be due to being a high context society where Cypriots have closer relationship within family members, friends and their colleagues (Hall and Hall, 1990). In addition, 30% (f=42) answered 'Strongly Agree' and 44.5% (f=60) mentioned that they 'Agree' with the statement 'I trust my colleagues'. This shows, there is trust which is a good sign for improving the TKC as Smedlund (2008) mentioned that trust is important indicator for the TKA.

Regression Models 2 and 8 indicated that the SAI has positive effect within TKC as it is proposed in Hypothesis 2. This may be due to usage of modern methods and technology which increase TKC (Hildrum, 2009; Lopez-Nicolas and Soto-Acosta, 2010). On the other hand, the statement 'When there is a new method within my profession, my organization immediately follows it' perceived 23% (f=31) 'Strongly Disagree' and 24% (f=33) 'Disagree'. Likewise, the statement 'When there is a new method within my profession, my organization immediately adopts it' perceived 18% (f=25) 'Strongly Disagree' and 28% (f=38) 'Disagree'. Primary research findings highlighted that the SAI which is positively affects TKC can be improved if the organizations' research and adoption of new methods is improved.

Regression Model 3 indicated that TKA is being effected by Media Retrieval where 62% (f=86) of the participants respondents that they always use their mobile phone to access social media. For that reason, social network integrated mobile applications or application on social networks can be created to increase TKA of the physicians. This result also supports the view that IT is important tool for sharing/accumulation of the tacit knowledge (Tiwana, 2002). On the other hand, Regression Model 11 indicated that TKT is being negatively affected by Media Retrieval. Nevertheless, it is advised for the Ministry of Health to invest for social media applications to increase the TKA of the physicians for giving the high quality services to the public as well as letting them chance to increase the degree of professionalism while TKT will be affected negatively.

Regression Models 4 and 12 indicated that TKC is affected by Medium of Communication which supports Hypothesis 6. There is consistent medical consultation within the physicians thus regression models are understandable. It was also highlighted that availability of medium to communicate is important for the TKT (Nonaka et al, 2000; Murray and Peyrefitte, 2007). Furthermore, Joia and Lemos (2010) mentioned the selection of the right medium for communicate is important. In this study it is highlighted that, electronic mail was the most used choice 82% (52% always, %30 high usage), which is followed by WhatsApp/Viber 66% (40% always, 26% high usage) and social networks 58% (26% always, 32% high usage). It was surprising that social network was the third option yet it is promising that the TKA of the physicians can be increased by using these three mediums. Ministry of Health can send the state art of the medical and technical articles related to the physicians' speciality by email on a regular basis, messaging groups can be created within the physicians according to their department and social media groups can be created to increase physicians' TKC from these mediums.

Regression Models 6 and 9 highlighted that Communication Frequency has negative effect within TKC which has not been supported by Hypothesis 4. This may be due to several reasons. Physicians might be distracted as their Communication Frequency increases or they may prefer to be alienated from work stress and use communication for other activities like hobbies or relaxing themselves. It had been mentioned that reward is important for the TKC (Joia and Lemos, 2010, Lin and Lo, 2015). On the other hand, primary research findings indicated that statement 'My organisation rewards me as I share knowledge' perceived 43% (f=59) 'Strongly Disagree' and 29% (f=39) 'Disagree'. Thus, by considering the importance of reward in the literature, it could be recommended that Ministry of Health could review their reward structure on a macro level, in order to encourage physicians for knowledge sharing and improve their TKC. It is also advised that training seminars could be given to physicians in order to improve their professionalism based on SAI.

Regression Models 5 and 10 indicated that Institutions has positive effect within TKC which supports Hypothesis 3. It is argued that private institutions are more competitive and this may affect TKC of the organization as willingness to share the tacit knowledge may be lesser due to competition.

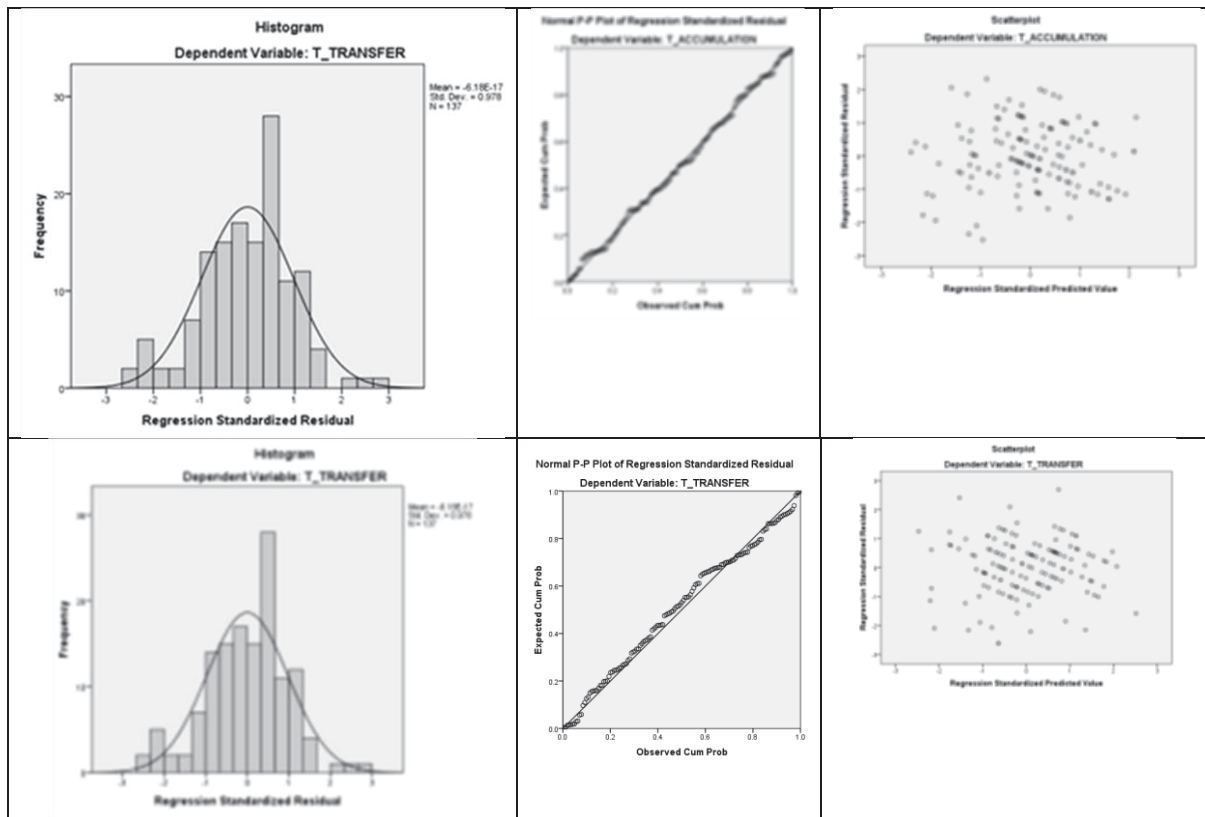
6. Conclusion and further studies

As this study highlights the concept of tacit knowledge capacity is embedded by SE and SAI. In addition to this, there are also demographic variables such as Media Retrieval, Institutions and Medium of Communications which has positive effect within TKC while Communication Frequency perceived negative relationship with TKC. It is argued that negative relationship is due to work stress and high complexity of the profession.

Actions with the purpose of increasing the TKC had been proposed to Ministry of Health such as reviewing the reward structure, researching new methods consistently, to send recent medical articles by e-mail, creating WhatsApp/Viber messaging groups for instant internal communication of the departments and investing social media applications as well as creating groups on social media which can improve TKC of the physicians.

It would be beneficial to repeat this work both to the other professional groups inside a country or by making cross cultural studies. One of the most important limitations of this study is about the sample size which is due to North Cyprus' small population. In addition, the tacit knowledge concept is very difficult to explain as well as it took place at the abstraction level of the mind. There is also limited evidence to show the relationship within the TKT and TKA.

Appendix 1



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