

Influence of Learning Motivation and Behavior on Learning Experience and Academic Satisfaction in Higher Education

Hisaki Kawamoto, Tokyo Institute of Technology, Japan
Yuki Watanabe, Tokyo Institute of Technology, Japan
Kazuyoshi Hidaka, Tokyo Institute of Technology, Japan

The Asian Conference on Education & International Development 2017
Official Conference Proceedings

Abstract

Managing and evaluating educational outcomes are challenging because of their intangibility and heterogeneity. In particular, Parrish's Learning Experience (LX), results in a change in value, motivation, or behavior related to study, is seldom to consider as an integral part of Perceived Outcome Quality (POQ). Therefore, our primary purpose is to propose a new evaluation method of POQ with LX to realize more accurate course evaluations. The research is based on the following research hypotheses: H1) Improving attitude toward learning positively affects LX; H2) Meta-cognition skills positively affect LX; H3) LX positively affects Student Outcome Satisfaction (SOS); H4) LX positively affects Net Promoter Score (NPS), students' voices and royalties. For the surveys, we made a questionnaire to measure LX levels, and made good use of the questionnaires in previous works to measure academic satisfaction, meta-cognition skill, academic outcomes, and attitudes. The voluntary participants were thirty Japanese students in Tokyo University of Science and seventeen Japanese students in Aomori Chuo Gakuin University. The results of Structural Equation Modeling showed that H1) Improvement of learning behavior had the considerable relationship to LX; H2) Meta-recognition skills did not have the significant relationship to LX; H3) LX did not have the significant relationship to SOS; and H4) LX made the significant impact on NPS. In conclusion, we could show that there were meaningful relationships among learning attitudes, LX, and NPS. Therefore, LX could be an important factor of the conceptual model of POQ to measure more accurate course evaluations.

Keywords: Learning experience; perceived service quality; course evaluation; academic satisfaction; net promoter score

iafor

The International Academic Forum
www.iafor.org

Introduction

Background

Quality assurance in education is a critical concern for many schools and instructors. The concept of Instructional Design (ID) has provided models and theories to make an educational instruction more effective and attractive for a long time. However, although the conceptualization of the service quality and the measurement of it have been debated in the service management field, there is still room for improvement in measurement of educational service quality. Parasuraman, Zeithaml and Berry (1985) mentions that service products have four different traits, intangibility, inseparability, heterogeneity, and perishability, compared to physical products'. Additionally, educational service has a delayed benefit service character which makes the quality management more challenging. Fujimura (2008) says that service benefits can be classified into two types, the immediate benefit service and the delayed benefit service. The immediate benefit service is that customers can feel benefits in a short time, such as food services and retailing services. The delayed benefit service is that customers need long-term to feel benefits, such as educational services and medical services. For example, educational outcomes are difficult to be obtained in a short time because not only it takes time to learn subjects but also hardworking is necessary to achieve goals. As well as, academic outcomes, such as test scores and grades, are probabilistic events because it may depend on students' intelligence and their efforts. Likewise, the outcome quality management in education is a quite difficult theme. Therefore, in this paper we focus on how to measure perceived outcome qualities (POQ) and how much students totally satisfy with their outcomes (Student Outcome Satisfaction: SOS).

Currently, a popular service quality concept is the American Customer Satisfaction Index (ACSI) model, the cross-industry measure of customer satisfaction, originally defined by Fornell (1992) and revised by Fornell and Johnson (1996) and University of Michigan (2005). Four years later, based on the ACSI model, Japanese Ministry of Economy, Trade and Industry (2009) developed the Japanese Customer Satisfaction Index (JCSI) model (Figure 1). Like the ACSI model, the JCSI model has six factors, customer expectations, perceived quality, perceived value, customer satisfaction, customer voices, and customer loyalty or advocacy, and the model shows relationships among the six factors.

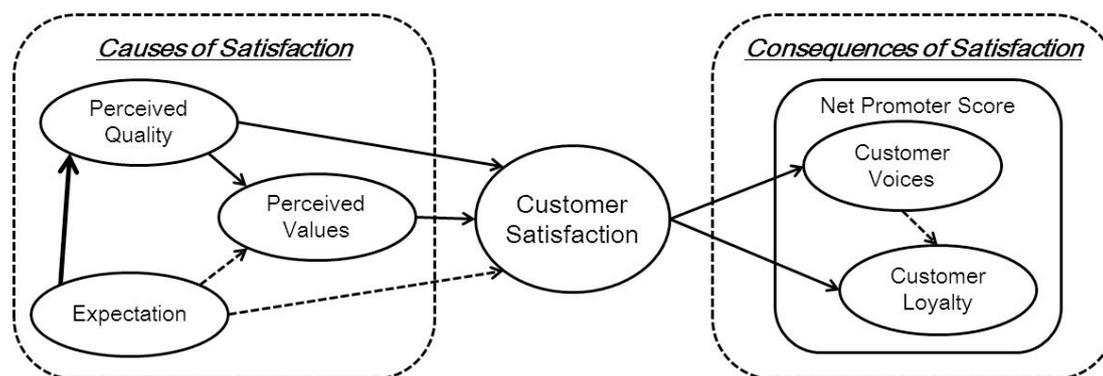


Figure 1: Japanese Customer Satisfaction Index Model (The solid-lines show the strong relations and the broken-lines indicate the weak relations)

Another famous service quality model was developed by Gronroos (1984) in Norway. His model focuses on measuring the perceived service quality, which has 2 dimensions, technical quality and functional quality. The technical quality is what the customer gets and the functional quality is how the customer gets the outcomes. After a decade, adding an

environmental dimension, Rust and Oliver (1994) revised Gronroos' model to the three-component model of service quality which has service product, service delivery and service environment. Furthermore, Brady and Cronin (2001) developed Rust and Oliver's model to the new perceived service quality model from their further research, which has three factors, outcome quality, interaction quality, and physical environmental quality (Figure 2). It is almost same as Rust and Oliver's concept; however, each dimension has three sub-categories so this is useful to break down educational service into quality units. Based on the model, the outcome quality has three sub-categories, waiting time, tangibles or results, and valence or non-monetary costs. This model indicates that customers evaluate the outcome quality not only by tangibles or results but by the waiting time to obtain them and by the valence to obtain them.

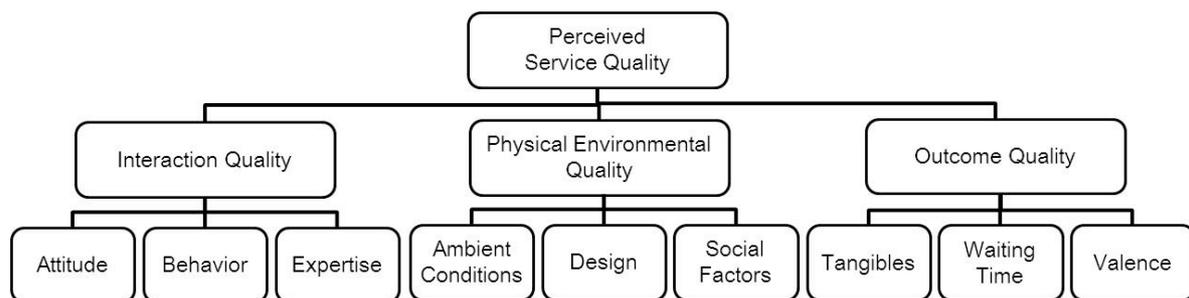


Figure 2: Brady and Cronin's conceptual model of perceived service quality

These models indicate the affective factors would be in the interaction quality or the physical environmental quality as the process quality. However, in educational situations, the affective factors, such as to realized learning values, to increase learning motivation, and to improve learning behavior, could be very important educational outcomes to promote learning engagement and sustainability. However, most service quality concepts do not include affective factors as tangibles of outcome quality.

In addition, the most popular learning motivation and satisfaction model, Keller's ARCS model, also does not include the affective factors as the consequence of education. Keller's ARCS model (Keller, 1983 1987) and Keller's ARCS-V model (Keller, 2009), which describes the emotional pass among the cognitive domain (performance and consequence), the affective domain (curiosity, motives, expectancy and effort), and academic satisfaction (Figure 3). His model shows that the affective domain affects the cognitive domain, then the cognitive domain influences the educational outcomes, and after that the educational outcome has an effect on academic satisfaction.

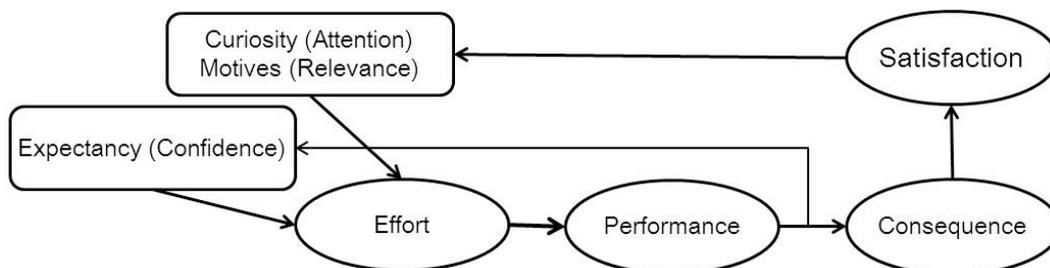


Figure 3: A Macro-Model of Motivation, Learning, and Performance

Enhancing Model

First of all, we focus on outcome quality measurement in this research, because it is the critical concern for schools and instructors, like we mentioned above. Secondly, the tangibles in the figure 2 were renamed learning outcomes. However, Brady and Cronin's model is too general to measure educational service quality so we need to break down learning outcomes into sub-categories. Then, we need to defined a new learning outcome measurements based on a new educational concept model.

In fact, several researchers argued about the educational outcomes. Bloom (1956) defined learning outcomes in the taxonomy of educational objectives. Based on his definition, the purpose of learning has a cognitive domain, an affective domain and a psychomotor domain. The cognitive domain includes knowledge and the intellectual development; the affective domain involves emotional feelings, values, motivations, and attitudes; the psychomotor domain has physical movement, coordination, and use of the motor-skills.

Another concept is Gagne's five categories of learning outcomes (Gagne, 1985), which includes information, intellectual skills, cognitive strategies, motor skills, and attitudes. This classification also tells us the educational outcome has three components, the cognitive domain (information, intellectual skills and cognitive strategies), the affective domain (attitudes), and the psychomotor domain (motor skills). The table 1 shows the summary of them. Therefore, we wander if the affective domain could be in the service quality model, excepted emotional feelings.

Table 1: Classifications of learning outcomes

Researcher	Cognitive domain	Affective domain	Psychomotor domain
Bloom (1956)	Knowledges Intellectual development	Emotional feelings Values Motivations Attitudes	Physical movement Coordination Use of the motor-skills
Gagne (1985)	Information Intellectual skills Cognitive strategies	Attitudes	Motor skills

Yet, based on the classification of learning outcomes, the affective factors could be one of the learning outcomes and it might affect satisfaction. However, although some researchers tried to find the relational pass from learning motivation to academic satisfaction, they concluded that the learning motivation and academic satisfaction did not have the significant pass relationships (Stephen, 2013; and more).

However, several points to be improved are in the previous research methodologies. First, they measured the affective factor at that moment but did not measure the change during the course work. For example, students may feel benefits recognizing how much they increased their interest and motivation and improved their learning behavior through a lecture; therefore, measuring how much growth is necessary as POQ. Secondly, students' characters were not considered. High metacognition skills may help students to see their changes of their affective achievements. Although test scores and final grades are explicit knowledge, motivational and behavioral changes are tacit knowledge (Somech, 1999). Furthermore, students' primary purpose of study is knowing and understanding the subject and obtaining high scores and grades. In contrast, enhancing their learning motivation and improving behavior are not their primary purpose. In fact, schools and teachers do not evaluate and tell students their changes of learning attitudes. Thus, affective achievements would be tacit achievements. Therefore, we think that the more students have metacognition skills, the more

they recognize the affective achievements. Finally, the affective achievements is intent of students so it probably affects the net promoter score (NPS), or students' voice and royalty (Reichheld, 2006). These ideas We mentioned above have not discussed enough yet.

We use the research framework for Learning Experience (LX) (Parrish & Wilson, 2008) as a part of outcomes in the affective domain. LX tells the levels how much students gain values and motivation of a particular subject through participation in the lecture. Parrish's LX concept has six levels; Level 1: no experience, which means students did not learn anything; Level 2: mindless routine, which means students did not have specific goals; Level 3: scattered/ incomplete activity, which means students gave up or changed their direction in the middle; Level 4: pleasant routine, which means students felt happy to study the subject and join the lecture; Level 5: challenging endeavors, which means students wanted to study hard; and Level 6: aesthetic experience, which means students realized that the subject was related to their future goals and wanted to study more.

Considered these ideas, this study focused on the investigation how much obtaining LX affects students' SOS and NPS. There have not been any researches which found the relationship among learning motivation, learning behavior, LX, POQ, SOS and NPS.

Objectives of Study

Enhancing the conceptual model of POQ of educational services our purpose (Figure 4). We focus on influence of LX as a part of POQ to students' SOS and NPS. These findings could realize more accurate course evaluations in higher education. The research is based on the following research hypotheses: H1) Improving attitude toward study positively affects LX; H2) Metacognition skills positively affect LX; H3) LX positively affects SOS; H4) LX positively affects NPS, students' voices and royalties. The figure 4 shows the hypothetical research model, which combined JCSI model, Brady's POQ model with Parrish's LX, Bloom's taxonomy of objectives, and Keller's ARCS model.

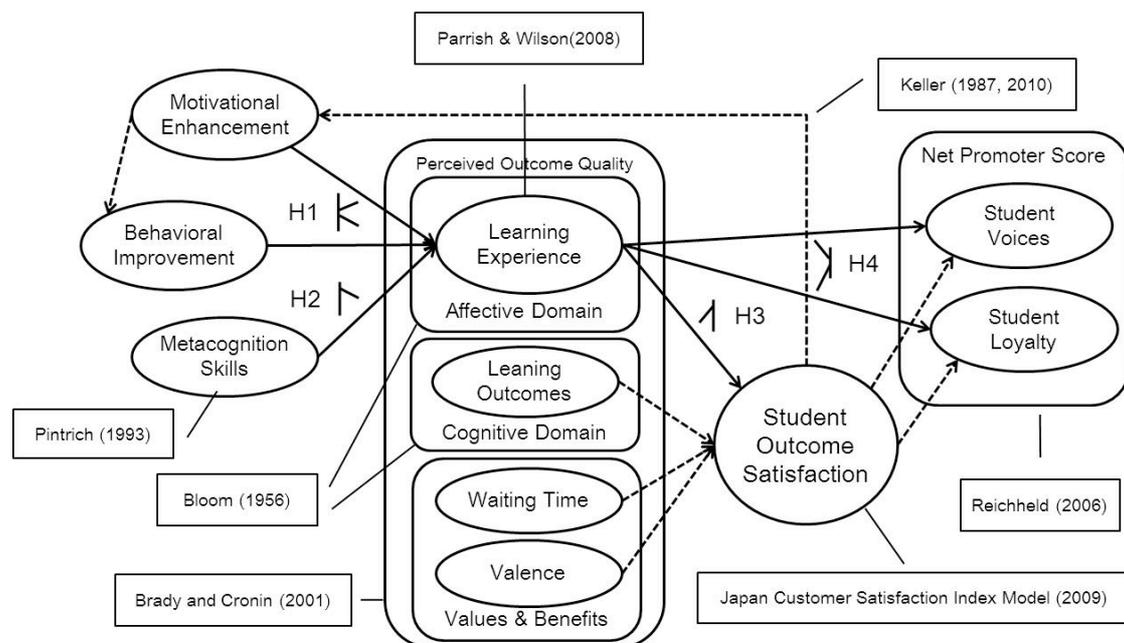


Figure 4: Enhanced conceptual model of educational POQ with LX and our hypotheses (Broken lines represent theories and models demonstrated by previous researches)

Research Methods

Participants

For this study, thirty Japanese college students at Teaching Methods in Information Studies (TMIS) class in Tokyo University of Science and seventeen Japanese college students at Interpersonal Communication I (ICI) class in Aomori Chuo Gakuin University were involved. The range of their age was from eighteen to twenty two (27 males and 20 females). The students in TMIS were in the similar age range and with the similar subject knowledge background. In the same way, the students in ICI had the similar backgrounds. However, the background of the students in ICI was different from the TMIS students'. The instructor in TMIS class and one in ICI class were different.

Data Collection

All students took the lecture every week and there were about fifteen lectures during the first semester in 2016. One lecture was one and half hours for two credits. The first semester of both universities was held from April 2016 to August 2016 and the second semester had been held from September 2016 to January 2017. In the first day of the second semester, students were asked to fill in a questionnaire about the class of the first semester in 2016. We used paper based questionnaires to measure their (1) POQ, (2) SOS, (3) NPS, and (4) meta-cognition skills. We used the same questionnaires to all forty seven students.

Questionnaires

The students were required to report on a Likert scale from 1 to 5 for all questions, excepted for LX level.

(1) POQ (Perceived Outcome Qualities)

This questionnaire consisted of thirteen questions assessing the outcome quality of the class. It is based on the perceived service quality concept (Brady and Cronin, 2001), which POQ has three sub-factors, waiting time, tangibles, and valence (Figure 2 & 4).

We made a question of waiting time and a question of valence. The waiting time and valence could be measured through the service costs concept (Lovelock, 1999). The service cost includes money, time, physical effort, psychological burdens and sensory burden. The questions are: "Do your overall results of this class convince you on the basis of your study hours during the semester?"; "Do your overall results of this class convince you on the basis of your efforts during the semester?". We did not include any questions about monetary costs because their parents usually paid the tuition.

The learning outcomes could be separated two factors, the cognitive achievements and the affective achievements, from the taxonomy of educational objectives (Table 1 & Figure 4). The cognitive domain has seven questions about qualities based on Enhancing Teaching-Learning Questionnaire (ESRC, 2009) The sample questions include: "How much you learned from this course unit? (1) Knowledge and understanding about the topics covered (2) Ability to think about ideas or to solve problems" Two questions about achievements (Tokyo Institute of Technology, 2009): "How much did you achieve your goal through this course unit?" and "How much did you succeed in the exam and the grade of this course?"

Parrish's LX level was measured by asking one question (Table2). To know the LX level of students we asked students to choose one level from the table2. The question is: "Please choose one level from the Table2, which is most applicable to your current situation?"

Table2: Measurement of LX level

Level of LX	Situations
Level 1	I have not learned anything what I need in this lecture. The lecture is not interesting.
Level 2	I just do what the teacher assigns. I do not have a specific goal in this lecture.
Level 3	I get interested in this subject through the lecture. However, I might not work hard if I am busy for something else.
Level 4	I get interested in the subject through the lecture and I work hard.
Level 5	I get interested in the subject through the lecture and work enthusiastically. I search or read related topics outside of the class.
Level 6	I get very interested in the subject through the lecture. I realize that this subject is very important for my future so I want to study more in the future.

(2) SOS (Student Outcome Satisfaction)

SOS is measured by one question: “Are you satisfied with your overall outcomes in this class?”.

(3) NPS (Net Promotor Score)

NPS has two questions for students’ voices and students’ royalty. The question of the students’ voice is that “Do you recommend this class to your friends or junior students?”; the question of the students’ royalty is that “Do you want to take an advanced class or related class of this subject, if available?”

(4) Meta-cognition skills

This questionnaire consisted of six questions assessing the students’ overall meta-recognition skills (Umemoto, 2013). The questions include: “I usually make my study schedule at first.”; “I usually consider what I need to study and how I should study at first.”; “When I am studying, I consider my study methods are effective.”; “When I am studying, I usually check I could memorize what I learn.”; “When I am studying, I try to know what I do not understand.”; “I usually try to meet my study schedule.”

Statistical analysis

This study employed descriptive statistics and reliability analysis to establish validity of the measurement scale. To identify the relational pass among learning motivation, learning behavior, LX, SOS and NPS, Structural Equation Modeling (SEM) was used. The data obtained from the survey were analyzed using SPSS and AMOS for Windows, Version 24. Figure 5 shows our research model for SEM.

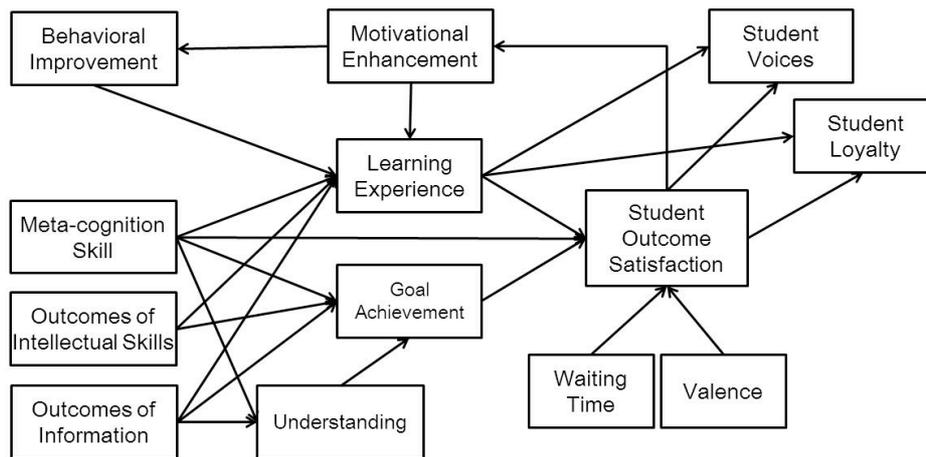


Figure 5: The research model for SEM

Results

Descriptive statistics

The table 3 shows the results of descriptive statistics. Since metacognition skills, information outcomes, and intellectual skill outcomes have subscale, we examined the internal consistency of them. The result showed that metacognition skills ($\alpha = .77$) and intellectual skills ($\alpha = .71$) have moderate internal consistency and information ($\alpha = .60$) has low internal consistency. We checked the result of information in detail, but we could not find any problematic questions so we included all questions in this analysis.

Table3: Means, SD, α , and correlations among variables

	Mean	SD	α	1	2	3	4	5	6	7	8	9	10	11	12
1 SOS	4.17	.84													
2 LX	4.19	1.25		.36*											
3 Goal achievement	3.74	.74		.56**	.20										
4 Motivational enhancement	3.98	1.07		.49**	.44**	.46**									
5 Behaviors improvement	3.89	1.11		.42**	.47**	.45**	.88**								
6 Student voices	4.30	.93		.35*	.42**	.21	.36*	.39**							
7 Student royalty	4.02	1.11		.41**	.58**	.30*	.47**	.55**	.79**						
8 Metacognition skills	3.53	.80	.77	.21	.04	.01	-.06	-.01	.11	.04					
9 Understanding	3.43	1.19		.53**	.13	.62**	.48**	.45**	.14	.19	.02				
10 Information outcomes	3.96	.64	.60	.49**	.37*	.59**	.41**	.38**	.49**	.57**	.06	.29*			
11 Intellectual skill outcomes	3.74	.77	.71	.36*	.55**	.25	.46**	.37**	.20	.43**	.02	.21	.39**		
12 Waiting time	4.04	.96		.23	.03	.23	.49**	.44**	.18	.12	-.13	.52**	.17	.27	
13 Valence	4.06	.92		.35*	.07	.38**	.58**	.52**	.23	.19	.01	.59**	.34*	.22	.84**

* $p < .05$, ** $p < .01$

The table 3 indicates that SOS was significantly correlated to LX, goal achievement, motivational enhancement, behavior improvement, student voices, and student royalty. The table 3 also says that LX was significantly correlated to SOS, motivational enhancement, behavior improvement, student voices, and student royalty. Finally, meta-cognition skills do not have the significant relationships to any other variables.

SEM

Using the experimental model in The figure 5, we conducted an analysis by AMOS and deleted arrows until all arrows' p-values are lower than 0.10. The figure 6 shows the results of SEM. We assessed model fit by evaluating the overall pattern of the fit indices, including the chi-square, comparative fit index (CFI), and the root-mean-square error of approximation (RMSEA). The fit indices of this model were χ^2 (40, $N=47$) = 50.46, $p = .12$, CFI = .96, and RMSEA = .075.

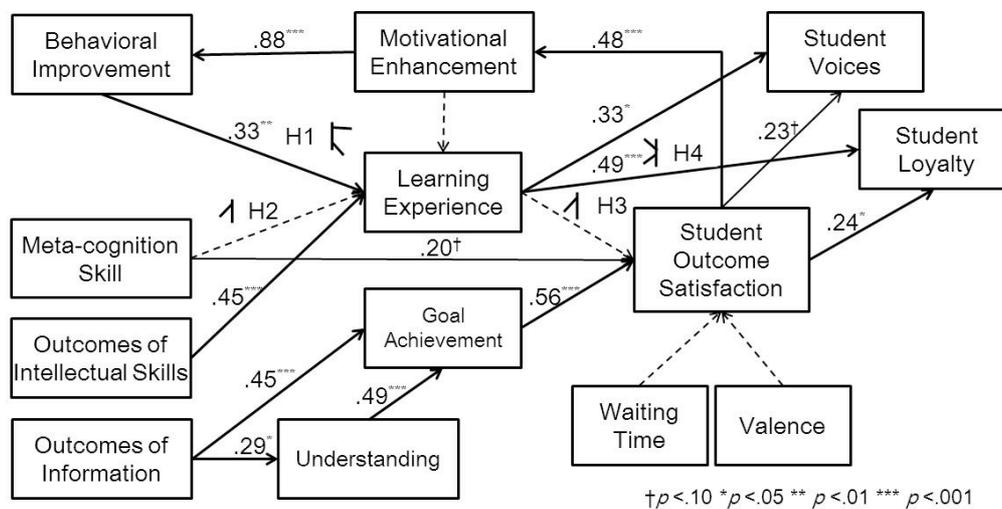


Figure 6: Results of SEM (The broken lines have neither the significant relationships nor the nonsignificant trends.)

Discussion

The main purpose of this study was to examine whether there were the significant relationships among motivational enhancement, behavioral improvement, LX, SOS, and NPS. We tested they hypothesis from H1 to H4.

H1): Motivational enhancement indirectly affects LX, and behavior improvement directly affected LX;

H2): Metacognition skills did not have the significant relationship to LX;

H3): LX did not have the significant relationship to LX;

H4): LX had the significant relationships not only to the student voices but to the student loyalty.

First of all, although motivational enhancement did not have the direct relationship to the LX, it indirectly affected the LX mediated by the behavioral improvement. This pass can be explained by Keller's ARCS model (Figure 3), which indicates the relational pass from goal achievement, SOS, motivation, and behavior. Thus, the result was reasonable.

In addition, meta-cognition skills did not have any correlation to other variables in the table 3. One problem of the analysis was that the meta-cognition skill was the overall meta-cognition

skills' score, although meta-cognition skills have three sub-categories, meta-cognition planning, meta-cognition control, and meta-cognition monitoring (Livingston, 1997). Each strategy has the different manner so if it is divided to three skills, each meta-cognition skill still has a potential to have the significant relationships to LX.

LX did not have the significant relationship to SOS. In fact, this result was consistent with the findings of Stephen (2013) that it could not find the significant relations between motivation and academic satisfaction. Possible situations to this result might be considered. First, some students' LX was high, but goal achievement and SOS were low. Second, students' LX was low, but the goal achievement and SOS were high.

Finally, support was found for the hypothesis five, which was the novel finding. Parrish (2011) says that LX can be obtained by increasing individual intention of learning engagement. Reichheld (2006) insists that NPS is individual intention of service sustainability.

The main findings of the study showed that the significant relational pass existed from motivational enhancement, to behavioral improvement, to LX and to NPS. Another key finding was that LX had the more significant effect on NPS than SOS had. The present results support Keller's ARCS model (1983), Parish's LX (2008), extend Brady, Cronin's perceived service quality model (2001), and JCSI model (2009).

Limitation

It has to be noted that the results should be considered in a cautious way as the study was applied in specific settings. The findings of this research may only be applicable in similar contexts. In addition, although we tried to control several educational setting variables, we realized that other variables might exist, such as social and economic environment, educational systems, and school environment, which might have influenced students' perceived outcome quality and outcome satisfaction.

Conclusion

In conclusion, this study confirms that there were meaningful relationships among learning attitudes, LX, and NPS in higher education. Therefore, LX could be an important factor of the conceptual model of POQ to measure more accurate course evaluations.

Acknowledgement

This research is founded by the Japan Society for the Promotion of Science (JSPS) Grants-in-Aid for Scientific Research (A) (Grants ID: 26245044).

Thank you for advice about designing questionnaires to Yoshikazu Ishibashi Ph.D. and voluntary research participants in Tokyo University of Science and Aomori Chuo Gakuin University.

References

- Bloom, B., Englehart, M. Furst, E., Hill, W., & Krathwohl, D. (1956). *Taxonomy of educational objectives: The classification of educational goals, Handbook I: Cognitive domain*. New York: Longmans.
- Brady, M.K. & Cronin, J.J. Jr (2001). Some new thoughts on conceptualizing perceived service quality: a hierarchical approach. *Journal of Marketing*, 65, 34-49.
- Christian Grönroos (1984). A Service Quality Model & its Marketing Implications. *European Journal of Marketing*, 18(4), 36-44.
- ETLQ (2002). ETL Project, Universities of Edinburgh, Durham and Coventry: <http://www.ed.ac.uk/etl>
- Fornell, C. (1992). A National Customer Satisfaction Barometer: The Swedish Experience. *Journal of Marketing*, 56(1), 6-21.
- Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Everitt Bryant, B. (1996). Growing the trust relationship [Electronic version]. *Journal of Marketing*, 60(4), 7-18. Retrieved [insert date], from Cornell University, School of Hospitality Administration site: <http://scholarship.sha.cornell.edu/articles/431/>
- Fujimura Kazuhiro & Chihiro Morito (2015). Examining the customer satisfaction model of the 'Benefit Delay' service : Investigating the possibility of the development of the customer satisfaction model by using a health care service as a case. *The kagawa university economic review*, 87-3.4, 103-149.
- Gagne, R. (1985). *The Conditions of Learning* (4th.). New York: Holt, Rinehart & Winston.
- Keller, J. M. (1983). Motivational design of instruction. In C. M. Reigeluth (Ed.), *Instructional design theories and models: An overview of their current status*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Keller, John M. (1987). Development and use of the ARCS model of instructional design. *Journal of instructional development*, 10(3), 2-10.
- Keller, J. M. (2009). Motivational design for learning and performance: The ARCS model approach. *Springer Science & Business Media*.
- Livingston, Jennifer A. (1997). Metacognition: An Overview, *Unpublished paper for CEP 564, Cognitive Psychology*, SUNY at Buffalo. 20 July 2000: <http://www.gse.buffalo.edu/fas/shuell/cep564/Metacog.htm>.
- Lovelock, C, & L,Wright (2002). *Principle of Service Marketing and Management 4*. (2nd ed.), Upper Saddl cRiver, NJ: Prentic eHall.
- National Quality Research Center., & Michigan Ross School of Business. (2005). American customer satisfaction index (ACSI): *Methodology report*. Ann Arbor, MI: Regents of the University of Michigan.

Parrish, P., & Wilson, B. G. (2008). *A design and research framework for learning experience. A paper presented at the 31st Annual Convention of the AECT*, Orlando, FL.

Parrish, P., Wilson, B. G., & Dunlap, J. C. (2011). Learning experience as transaction: A framework for instructional design. *Educational Technology, 51(2)*, 15-22.

Parasurman, A., Valarie A. Zeithaml, & Leonard Berry (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing, 49 (Fall)*, 41-50.

Reichheld, F.F. (2006). *The Ultimate Question. Harvard Business School Press*, Boston, MA.

Rust, R.T., & Oliver, R.L. (1994). Service quality: insights and managerial implications from the frontier. In Rust, R.T. & Oliver, R.L. (Eds), *Service quality: New directions in theory and practice*, pp. 241-68.

Rust, Roland T. & Richard L. Oliver (2000) Should We Delight the Customer?. *Journal of the Academy of Marketing Science, 28 (Winter)*, 86-94.

Somech Anit & Bogler Ronit (1999). Tacit Knowledge in Academia: Its Effects on Student Learning and Achievement. *The Journal of Psychology, 133 (6)*, 605-616.

Stephen Madonna, Jr. Vincent D. Philpot (2013). Motivation and Learning strategies, and academic and student satisfaction in predicting self-efficacy in college seniors. *The Quarterly Review of Distance Education, 14(3)*, 163-168.

Umemoto Takatoyo (2013). The Effects of Metacognitive and Motivational Regulation Strategies on the Use of Cognitive Strategies and Persistence in Learning. *Japan society for educational technology, 37-1*, 79-87.

Contact email: kawamoto.h.ac@m.titech.ac.jp