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**Diseño de un modelo de co-creación de los programas de grado en las
universidades ecuatorianas**

TESIS DOCTORAL

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Resumen

Las universidades se enfrentan en la actualidad a una fuerte competencia dado el incremento de ofertas de programas universitarios, aparejada dicha situación a las reducciones presupuestarias que ha sufrido el sector educacional frente a las crisis económicas existentes. De igual forma, los estudiantes se encuentran cada vez más informados y han desarrollado una mayor capacidad de movilización; todo lo cual tributa a la internacionalización de la educación superior. Es así como se convierte en una necesidad vital para las universidades el involucrarse en proyectos estratégicos innovadores en aras de desarrollar ventajas competitivas frente a las demandas existentes en el mercado educativo.

La presente tesis propone aplicar un enfoque co-creativo en los diferentes procesos universitarios, como una alternativa innovadora a implementar en los programas de grado para la gestión de los mismos. La co-creación se estudia como una propuesta para fomentar un cambio de paradigma donde los estudiantes se convierten en actores claves de las diferentes actividades que se desarrollan en las instituciones de educación superior.

Este enfoque promueve un cambio desde el modelo tradicional aplicado en dichas instituciones hacia la "co-creación del valor". Este movimiento implica que las organizaciones participen activamente en un proceso conjunto, donde los estudiantes también desempeñan un papel activo a través de la interacción directa. En este sentido, los estudiantes se convierten en actores activos durante el proceso de enseñanza-aprendizaje, a través del reforzamiento e incentivo de la participación de los mismos en entornos co-creadores para la generación del conocimiento. Algunas de las implicaciones positivas de este enfoque es que los estudiantes desarrollan habilidades como la comunicación, el liderazgo, la toma de decisiones, la autonomía y la independencia.

La primer parte de la presente tesis se enfoca en realizar una revisión bibliográfica de los principales conceptos relacionados con la co-creación del valor, así como su aplicación en el entorno universitario. En esta etapa se analizan las interacciones entre las diferentes variables que están presentes durante los procesos co-creadores como son la participación, comunicación, satisfacción, lealtad y confianza.

En una segunda fase, la cual permanece a lo largo de la investigación, se profundiza en el enfoque co-creador de valor en la educación superior centrado en el cambio de las metodologías educacionales basadas en los procesos de enseñanza-aprendizaje. De esta forma se propone un movimiento de los roles tradicionales del proceso educativo, donde se refuerza el papel activo y colaborativo del estudiante.

En la parte final de la tesis se desarrollan varios estudios donde se analizan diferentes modelos propuestos con la co-creación como eje central, evidenciándose que la comunicación y la participación son válidos precursores de la misma. Se confirman los impactos positivos de la co-creación sobre la lealtad, la satisfacción y la confianza de los estudiantes. El instrumento de recolección de datos aplicado fue una encuesta a estudiantes de programas de grado de varias universidades ecuatorianas. Las técnicas estadísticas utilizadas fueron principalmente el análisis factorial exploratorio, el análisis factorial confirmatorio y el modelado de ecuaciones estructurales.

Como conclusión general del estudio se puede remarcar que la co-creación es una herramienta pragmática a ser considerada e implementada en el contexto universitario con efectos positivos tanto para el estudiante como para la organización. La presente tesis confirma que la aplicación de esta perspectiva innovadora asegura el desarrollo de ventajas competitivas para las instituciones universitarias.

Resum

Les universitats afronten en la actualitat una forta competència donat l'increment d'ofertes en programes universitaris, així com les reduccions pressupostàries que ha patit el sector educatiu front les crisis econòmiques existents. Així mateix, els estudiants es troben cada cop més informats i han desenvolupat una major capacitat de mobilització; tot en conjunt contribueix a la internacionalització de l'educació superior. D'aquesta forma es converteix en una necessitat vital per a les universitats la seva participació en projectes estratègics innovadors amb l'objectiu de desenvolupar avantatges competitives front a les demandes existents en el marcat educatiu.

La present tesis proposa aplicar un enfocament co-creatiu als diferents processos universitaris, com una alternativa innovadora de marketing a implementar en els programes de grau per a la seva gestió. Es en aquest sentit, que la co-creació se estudia com una proposta per fomentar el canvi de paradigma on els estudiants es converteixen en actors claus de les diferents activitats que es desenvolupen en les institucions d'educació superior.

Aquest enfocament promou un canvi del model tradicional aplicat en dites institucions, cap a la "co-creació de valor". Aquest moviment implica que les organitzacions participen activament en un procés conjunt, on els estudiants també realitzen un paper actiu a través de la interacció directa. En aquest sentit, els estudiants es converteixen en actors actius durant el procés d'ensenyança-aprenentatge, a través del reforçament e incentiu de la seva participació en ambients co-creatius per a la generació del coneixement. Algunes de les implicacions positives d'aquesta perspectiva es que els estudiants desenvolupen habilitats com la comunicació, el lideratge, la presa de decisions, l'autonomia i la independència d'ells mateixos.

La primera part de la present tesis es centra en realitzar una revisió bibliogràfica dels principals conceptes relacionats amb la co-creació del valor, amb una aplicació a l'ambient universitari. En aquesta etapa s'analitzen les interaccions entre les diferents variables que estan present durant els processos co-creatius como són la participació, comunicació y satisfacció.

En una segona fase es profunditza en la perspectiva co-creativa de valor en l'educació superior centrada en el canvi de les metodologies educacionals basades en els processos d'ensenyament-aprenentatge. D'aquesta forma, es proposa un moviment dels rols tradicionals del procés educatiu, on es reforça el paper actiu y col·laborador de l'estudiant.

A la part final de la tesis es desenvolupen varis estudis on s'examinen diferents models proposats amb la co-creació com a eix central, evidenciant-se que la comunicació i la

participació son vàlids precursors d'aquesta. De la mateixa forma, es confirmaren els impactes positius de la co-creació sobre la lleialtat, la satisfacció i la confiança dels estudiants. L'eina de recollecció de dades aplicada va ser una enquesta a estudiants de programes de grau de varies universitats equatorianes. Les tècniques estadístiques utilitzades van ser principalment l'anàlisi factorial exploratori, l'anàlisi factorial confirmatori i el modelatge d'equacions estructurals.

Com a conclusió general de l'estudi es pot remarcar que la co-creació es una eina pragmàtica a ser considerada e implementada en un context universitari amb efectes positius tanta per a l'estudiant com per a l'organització. La present tesis confirma que l'aplicació d'aquesta perspectiva innovadora assegura el desenvolupament d'avantatges competitives per a les institucions universitàries, permetent-les obtenir nivells superiors de competitivitat.

Abstract

Universities are currently facing strong competition given the increasing offer of university programs, as well as budget cuts at the education sector as a result of the current economic crisis. Likewise, students are more informed and have developed a greater mobilization capacity; all of which contribute to the internationalization of higher education. This is how it becomes a necessity for universities to be involved in innovative strategic projects in order to develop competitive advantages against the demands of the educational market.

This thesis proposes to apply a co-creative approach in the different university processes, as an innovative marketing alternative to be implemented in the management of undergraduate programs. Co-creation is studied as a proposal to encourage paradigm change where students become key players in the different activities that are developed in institutions of higher education.

This approach promotes a change from the traditional model applied in such institutions, towards "co-creation of value". This movement implies that the organizations are actively involved in a joint process, where students also play an active role through direct interactions. In this sense, students become active actors during the teaching-learning process, through the reinforcement and incentive of their participation in co-creative environments for knowledge generation. Some of the positive implications of this approach are that students develop skills such as communication, leadership, decision making, autonomy and independence.

The first part of this thesis focuses on a systematic review of the main concepts related to value co-creation, as an application in university environment. At this stage the interactions between the different variables that are present during the co-creative processes such as participation, communication and satisfaction were analyzed.

The second phase focused on value co-creation in higher education changing the educational methodologies based on teaching-learning processes. In this way it is proposed a movement from traditional roles of the educational process, where the active and collaborative role of the student is reinforced.

In the final part of the thesis different models are developed with co-creation as central axis, evidencing that communication and participation are solid precursors of co-creation. Likewise, the positive impacts of co-creation on student loyalty, satisfaction and trust were confirmed. The data collection tool applied was a survey of undergraduate students from several Ecuadorian universities. The statistical techniques applied were mainly exploratory factor analysis, confirmatory factor analysis and the structural equations modeling.

As a general conclusion of the study it can be remarked that co-creation is a pragmatic vision to be considered and implemented in the university context with positive effects for student and for universities. This thesis confirms that the application of this innovative perspective ensures that competitive advantages are develop at university institutions, allowing to reach higher levels of competitiveness.

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CHAPTER I
INTRODUCTION

1. Introducción

La situación actual de la universidad se caracteriza por una creciente oferta de programas universitarios, generando una ardua competencia en este sector. Igualmente la crisis internacional ha producido reducciones presupuestarias considerables afectando también al sector educacional. Por otra parte, los estudiantes tienen cada vez mayor acceso a la información, con una mayor capacidad de movilización (nacional e internacional) propiciando así una mayor internacionalización de la Educación Superior (ES). De esta manera, cobra una mayor relevancia en las universidades el desarrollo de una visión estratégica en aras de satisfacer la demanda en el mercado educativo bajo las condiciones externas e internas existentes. La reevaluación de la misión de estas instituciones constituye una real necesidad (Kerr, 1987) con el fin de obtener y mantener una ventaja competitiva frente a la competencia (Arnett, Wittmann & Wilson, 2004).

El modelo tradicional aplicado en la ES está basado en que los estudiantes reciben pasivamente los servicios ofrecidos por la universidad. A través de esta perspectiva, la enseñanza se valora como un servicio prestado a los estudiantes por los docentes, donde dichos estudiantes son considerados "clientes" de los servicios ofertados (Díaz-Méndez & Gumerson, 2012). Bajo esta modalidad, los estudiantes, durante los procesos de enseñanza-aprendizaje tiene un papel colaborativo "pobre", ya que la metodología clásica se enfoca en que dichas actividades giran principalmente alrededor del docente como actor central. Sin embargo, la evolución reciente de ES tiende a cambiar este enfoque en la misma dirección que lo ha hecho la gestión del servicio, centrándose en la "co-creación del valor". Esta nueva visión engloba organizaciones que no se enmarcan solamente en ofrecer valor, sino que propician la participación activa de los alumnos, como uno de los stakeholders de la Universidad, los cuales desarrollan un rol colaborativo a través de la interacción directa.

En este sentido, los estudiantes se han convertido en actores principales durante el proceso de enseñanza-aprendizaje, a través del refuerzo e incentivo de la participación de los mismos en entornos co-creadores para la generación del conocimiento. Este cambio de estructura favorece el desarrollo de habilidades como la comunicación, el liderazgo, la toma de decisiones, la autonomía y la independencia (Bovill, Cook-Sather & Felten, 2011). En estos nuevos contextos, el estudiante no sólo se sienta a recibir lecciones, sino que participa en procesos de creación de valor generándose un ambiente colaborativo y motivador. Esta nueva óptica fomenta el aprendizaje, mejora las tasas de retención de los estudiantes, así como permite a la institución conocer lo que el estudiante realmente desea (McCulloch, 2009).

Por otra parte, cabe señalar que la co-creación de valor es una estrategia que ha tomado fuerza en los últimos años, la cual se basa en la premisa de que las empresas y los clientes pueden co-crear valor a través de la interacción entre ambos. La misma

considera la participación de los clientes como la piedra angular en la creación de dicho valor, gracias a la existencia de canales de comunicación sólidos (Bolton & Saxena- Iyer, 2009; Muñoz & Schau, 2011). Este enfoque permite a las organizaciones fomentar el conocimiento que poseen acerca de lo que los clientes realmente consideran valioso (Bettencourt, Brown & Sirianni, 2013) y promueve la comunicación entre todas las partes interesadas (Rexfelt et al., 2011).

Teniendo en cuenta la necesidad existente de que las instituciones de ES apliquen estrategias empresariales de marketing para mejorar la oferta (Díaz-Méndez & Gummesson, 2012) y de liderar en un ambiente competitivo regido por una fuerte crisis económica, en esta tesis, se propone la co-creación como una nueva herramienta para las universidades. Considerar al estudiante como eje central de las estrategias a seguir es fundamental para enfrentar los retos a los cuales se someten estas instituciones (Binsardi & Ekwulugo, 2003; Espinoza, Bradshaw & Hausman, 2002).

A pesar de que la implementación de la co-creación se ha estudiado ya con anterioridad en ambientes universitarios en contextos de programas de postgrados (Peralt-Rillo & Ribes-Giner, 2013; Ribes-Giner, Peralt-Rillo & Moya 2014; Ribes-Giner & Peralt-Rillo, 2015), no ha sido aún analizada en detalle en programas de grado. Esta alternativa se investiga en aras de potenciar las herramientas estratégicas a desarrollar por instituciones universitarias bajo el entorno donde se encuentran enclavadas, así como fomentar la nueva metodología de enseñanza-aprendizaje basada en la colaboración permanente de los estudiantes de grado.

La aplicación de este enfoque co-creativo en las universidades perfecciona la gestión de estas instituciones, gracias a un cambio en la metodología educativa centrada en el proceso de enseñanza aprendizaje donde el estudiante se convierte en un ente activo. En este sentido se le otorga más relevancia al estudiante, potenciándose la interacción del mismo con los docentes y la universidad.

La presente tesis profundiza en la aplicación de la co-creación en programas de grado, analizando los diferentes efectos que posee esta visión en el comportamiento del estudiante y en consecuencia, en las universidades.

2. Objetivos de la Investigación

Frente a la situación actual existente, en la cual las universidades se encuentran regidas por una alta competencia y considerables recortes de presupuestos, la búsqueda de alternativas de gestión se hace imprescindible para mantenerse en el mercado. La co-creación se estudia como una propuesta para fomentar el cambio de paradigma donde los estudiantes se convierten en actores claves de los diferentes procesos que se desarrollan en las instituciones de educación superior (IES).

La presente tesis tiene como objetivo general profundizar en la co-creación en el marco universitario de programas de grado, en aras de favorecer la transición hacia la implementación de la misma. Los principales objetivos específicos planteados son:

1. Identificar y estudiar las principales investigaciones realizadas, para la construcción de un marco conceptual que gire entorno al cambio hacia la lógica dominante del servicio sobre la cual se basa la co-creación.
2. Profundizar en la co-creación como alternativa factible a aplicar en el entorno universitario, en aras de fidelizar a los estudiantes de grado y fomentar el enfoque colaborativo y participativo de los mismos tanto en actividades curriculares como extracurriculares.
3. Construir un modelo basado en la co-creación para programas de grado, que incluya la colaboración activa del estudiante en los procesos de enseñanza aprendizaje, así como en las demás actividades universitarias.
4. Investigar los efectos que genera la participación y comunicación sobre la co-creación, y a su vez, los efectos de la co-creación en la satisfacción, confianza y lealtad de los estudiantes de grado.

La presente tesis está compuesta por 6 trabajos académicos. Cada uno de ellos se muestra en los diferentes capítulos de la misma.

El Capítulo I recoge la introducción de la investigación, así como los principales objetivos, metodología aplicada y los resúmenes de los artículos que contiene el documento.

En el Capítulo II se muestra el artículo “Co-creation impacts on student behavior”, el cual se enfoca en examinar la relación teórica existente entre diferentes variables que están presentes en el proceso de co-creación en las instituciones de educación superior. Estas variables, de las cuales se estudian conceptualmente sus conexiones, son co-creación, participación, comunicación y satisfacción. El estudio se encuentra publicado en *Procedia - Social and Behavioral Sciences*, la cual es una revista de Elsevier's indexada en *SCImago Journal & Country Rank* (SJR = 0.17, 2015).

En el Capítulo III, se refleja el artículo “Co-creation in Undergraduate Engineering Programs: Effects of Communication and Student Participation”. En esta investigación se verifica el modelo anteriormente planteado en el Capítulo II mediante la metodología de modelado de ecuaciones estructurales en los estudios de grado en ingenierías. Las variables que recoge el mismo son participación, comunicación y co-creación. Si bien el artículo anterior aborda los vínculos existentes entre dichos elementos de manera teórica, este artículo comprueba estadísticamente dichas relaciones. El estudio se encuentra aceptado con modificaciones por la revista *International Journal of Engineering Education*; indexada en *SCImago Journal & Country Rank*.

En el Capítulo IV, se refleja el artículo “Revisión sistemática de literatura de las variables claves del proceso de co-creación en las instituciones de educación superior”. Esta investigación muestra un análisis teórico de mayor cobertura al incluir variables nuevas como son la lealtad y la confianza; estudiando sus interacciones con la co-creación del valor. Ampliando la gama de variables a analizar, se logra tener un mayor dominio sobre el comportamiento del estudiante frente a la co-creación. El artículo ha sido aceptado para publicación por la revista TEC Empresarial, indexada en Latindex, Dialnet, Clase, Ebsco, Rebid, Google scholar, Actualidad Iberoamericana, Econbib, e-Revistas, Ulrich's web, Base, Scielo, Doaj, Emerging Source Citation Index by Thomson Reuters.

En el Capítulo V se presenta el artículo “The impact of co-creation on the student satisfaction: Analysis through Structural Equation Modeling”. El aporte de este estudio se basa en confirmar el modelo ya validado en el Capítulo III, además de incluir la variable satisfacción, como un nuevo elemento a considerar y a evaluar en este contexto. Este artículo se encuentra publicado por la Revista Abstract and Applied Analysis, en el special issue Analysis and Models in Interdisciplinary Mathematics 2016. La revista se encuentra indexada en SCImago Journal & Country Rank (SJR = 0.489, Q3, 2016), EBSCO, ProQuest, Directory of Open Access Journals (DOAJ), (JCR Impact Factor = 1.274, 2013), entre otras (<https://www.hindawi.com/journals/aaa/ai/>).

En el Capítulo VI se presenta el artículo “Co-creation impacts in student loyalty”, donde se valida un modelo a través de la metodología de modelado de ecuaciones estructurales. Dicho modelo introduce como elemento distintivo de los otros artículos, la comprobación del impacto de la co-creación sobre la confianza y la lealtad en el entorno universitario. La investigación está publicada en los Proceedings del 2016 CBIM Academic Workshop Center for Business & Industrial Marketing, Bilbao (Spain).

En el Capítulo VII se recoge el artículo “Co-creation at Higher Education Institutions”, cuyo elemento diferenciador es que aborda el impacto que presenta la co-creación del valor sobre dos nuevas variables: la satisfacción y la confianza de los estudiantes de grado. El artículo se encuentra publicado en los Proceedings del Congreso 10th International Technology, Education and Development Conference, indexados en el ISI Conference Proceedings Citation Index.

En el Capítulo VIII se muestran las principales conclusiones de los estudios desarrollados, las principales limitaciones detectadas, así como futuros estudios a implementar.

3. Metodología

La presente tesis está conformada por un compendio de publicaciones realizadas, incluyendo 4 trabajos publicados en revistas y proceedings académicos

internacionales, 1 artículo aceptado para publicación y 1 artículo aceptado con modificaciones. Cada publicación nace de una etapa diferente de la investigación desarrollada, para lo cual se utilizaron diferentes metodologías en dependencia de la necesidad de cada una de ellas.

Las metodologías aplicadas se presentan a continuación.

3.1 Revisión Bibliográfica

La revisión bibliográfica fue realizada como primer paso con el objetivo de recabar información sobre las investigaciones realizadas con anterioridad en el área estudiada. Esta metodología ofrece al mundo académico una experiencia de enriquecimiento (Hart, 1998), permitiendo a los investigadores acceder a valiosos recursos con el objetivo de fomentar las bases de conocimientos existentes (Tranfield et al., 2003). Igualmente, a través de la revisión bibliográfica es posible resumir los resultados en un tema en específico, e identificar las brechas existentes en aras de apoyar investigaciones futuras.

Este recurso fue utilizado inicialmente para conocer los estudios previos relacionados con la co-creación en el ámbito empresarial, identificando los principales conceptos teóricos relativos a la misma. Igualmente se profundizó en las teorías existentes que la sustentan y los factores que giran en torno a la co-creación. Al estar la tesis enmarcada en ambientes universitarios, se indagó en las investigaciones relacionadas en este entorno.

Uno de los elementos detectados fue la existencia de un vacío en estudios relacionados con las IES y la aplicación de la co-creación. En este sentido, las revisiones bibliográficas constituyen una fuerte evidencia de la necesidad de explorar más en temáticas que han sido poco analizadas y que precisan de una concentración mayor de la investigación.

3.2 Análisis Factorial Exploratorio

El Análisis Factorial Exploratorio (AFE) es una técnica estadística que se aplica con la finalidad de comprobar si los componentes principales de determinado cuestionario, se corresponden con los planteamientos teóricos de los autores. Permite reconocer si los elementos que se agrupan conjuntamente miden o no el mismo factor (Dobni, 2008).

El AFE posibilita analizar la estructura de las variables involucradas, tomando en cuenta elementos correlacionales entre ellas, detectando patrones de agrupamiento. Igualmente permite reducir el número de variables, con la perspectiva de dar explicación a determinada situación de manera más sucinta (Martínez & Sepúlveda, 2015).

Considerando que algunos estudios utilizan las encuestas como fuentes recopiladoras de información para medir determinadas variables establecidas, esta herramienta permite comprobar si dichas variables se corresponden con las teorías existentes. El programa estadístico que se utilizó durante la investigación fue el SPSS versión 19.

3.3 Análisis Factorial Confirmatorio

El Análisis Factorial Confirmatorio (AFC) se utiliza generalmente en las investigaciones sociales constituyendo una herramienta de estadística multivariada, y proporciona la comprobación de si los datos recabados se ajustan al modelo hipotético planteado.

El AFC permite al investigador especificar la cantidad de factores que se necesitan en los datos, y establecer las relaciones entre las variables medidas u observadas con las variables latentes. Este análisis se utiliza para confirmar o rechazar teorías planteadas.

Para evaluar dicha herramienta se analiza la fiabilidad, validez convergente y discriminante del modelo planteado. La fiabilidad está relacionada con el grado de errores aleatorios, y la validez convergente mide la consistencia interna de diferentes variables, ofreciendo información sobre cuán bien un constructo es medido por sus variables asociadas. Este análisis se aborda a través de los indicadores de varianza extraída promedio y de fiabilidad compuesta.

La validez discriminante permite analizar el grado en que una variable no se correlaciona con otras medidas, con las cuales teóricamente no debería correlacionarse. La misma se mide comparando la varianza extraída promedio con la varianza compartida de los constructos (Said, Badru & Shahid, 2011).

El programa utilizado para la aplicación de esta herramienta durante la investigación fue el SPSS Analysis of Moment Structures (AMOS).

3.4 Modelado de Ecuaciones Estructurales

El Modelado de Ecuaciones Estructurales (SEM) es una técnica estadística multivariante, que combina análisis factoriales con análisis de rutas. SEM se basa en una estructura de covarianzas creadas a partir de las variables observadas e incluye varios análisis multivariados estadísticos. Suele representarse a través de un diagrama de rutas y es de alta aplicabilidad a las ciencias sociales puesto que permite analizar las relaciones entre variables latentes (Hox & Bechger, 1998). Las variables latentes (constructos o factores) son aquellas que no son observables ni pueden ser medidas directamente. El uso de SEM se justifica habitualmente en las ciencias sociales debido a su capacidad para imputar las relaciones entre estos constructos no observables a partir de variables observables en modelos causales. Esta técnica permite la estimación de redes causales simultáneamente (Lowry & Gaskin, 2014).

SEM usa varios modelos para describir las relaciones entre las variables observadas, con el objetivo de realizar una prueba cuantitativa del modelo teórico planteado basado en las hipótesis generadas. A través de SEM se analizan las diferentes variables medidas, se estudia cómo estas definen constructos y a su vez, cómo estos constructos se encuentran relacionados entre sí. De esta forma SEM determina si ciertamente el modelo teórico se encuentra soportado o no por los datos de la muestra. Es por ello que las variables latentes se miden indirectamente a partir de varias variables observadas, las cuales sí pueden ser medidas a través de pruebas y encuestas (Schumacker & Lomax, 2004).

La metodología SEM permite igualmente realizar análisis de elementos moderadores, donde se puede profundizar en el comportamiento causal de variables al moderar el comportamiento de otros constructos. En este caso, se incursiona en el efecto que el ente moderador tiene sobre la relación causal existente entre dos constructos. De esta forma, se puede estudiar la existencia de diferencias entre grupos en modelos teóricos.

Un rasgo diferenciador de esta técnica es la oportunidad que ofrece de analizar varias variables observadas con el objetivo de entender con mayor profundidad un fenómeno en concreto. Considerando que las herramientas básicas de estadística solo permiten la utilización de un número pequeño de variables, SEM es una alternativa para el estudio de teorías complejas. Otra de las ventajas que ofrece es que incluye dentro de su análisis los errores de mediciones.

4. Datos del Estudio y sus Características

La investigación primeramente se llevó a cabo a través de una revisión bibliográfica, donde se detectaron los principales autores que han desarrollado estudios en el área de la co-creación. Igualmente se profundizó en trabajos donde se vinculaba esta estrategia y la lógica dominante del servicio en ambientes de ES.

Para la ejecución de la revisión sistemática de la literatura se establecieron varios pasos, dentro de los cuales se incluye la búsqueda en base de datos como Web of Knowledge, EBSCO and ABI/INFORM ProQuest en aras de encontrar artículos que hubiesen sido sometido a revisión por pares. Se seleccionaron palabras claves que englobaran el tema central a pesquisar, como fueron co-creación y co-producción (con y sin el símbolo “-”). El rango de tiempo establecido del 2004-2016 permitió analizar trabajos actualizados, generándose un resultado amplio de artículos. Se introdujeron nuevos términos claves como participación comunicativa, satisfacción, educación superior; se eliminaron las redundancias existentes y los artículos en cuyos resúmenes no se evidenciaba relación con la presente investigación. La recopilación de dicha información permitió establecer las bases primarias de la presente tesis.

Tomando en consideración los resultados de la revisión bibliográfica, se identificaron las principales variables centrales involucradas en los procesos de co-creación en instituciones universitarias y las relaciones teóricas existentes entre las mismas. Dichas variables correspondieron a participación, comunicación, satisfacción, confianza y lealtad. En base a trabajos ya desarrollados con anterioridad se conformó una encuesta como instrumento de medición de las variables mencionadas anteriormente. Se implementaron 10 versiones diferentes de la encuesta, modificándose el orden de las mismas para evitar el sesgo debido a la distribución. Se utilizó la escala de Likert con 7 niveles de respuesta (desde “completamente en desacuerdo” hasta “completamente de acuerdo”). El instrumento contenía un total de 31 preguntas y recababa información adicional sobre el sexo, semestre y carrera del encuestado. Su aplicación se enfocó en estudiantes de grado que estuvieran en los últimos semestres de la carrera, al poseer un dominio y conocimiento mayor de los servicios y funcionamiento de las universidades.

Primeramente fue contactado el personal directivo de dieciseis universidades ecuatorianas, al cual se le expuso el objetivo de la investigación y el perfil de los estudiantes a encuestar. Como resultado 11 de las instituciones accedieron a participar en el estudio y facilitaron la distribución física y digital (a través del google forms) de la encuesta. En total fueron 1065 los estudiantes involucrados, los cuales pertenecían a carreras de ingenierías, medioambientales, empresariales, educación y salud.

La información recabada fue organizada y analizada a través de las técnicas mencionadas anteriormente como el AFE, AFC y SEM. Se pudo verificar el impacto existente de la co-creación en el comportamiento de los estudiantes, detectándose igualmente efectos positivos en la satisfacción y la lealtad de estos.

5. Resúmenes Extendidos de los Artículos

5.1 Co-creation Impacts on Student Behavior

La co-creación es una nueva tendencia en el contexto empresarial destinada a la fusión de todas las partes interesadas, especialmente de los clientes en diferentes fases de creación y producción de productos y servicios. Dentro de este trabajo, los efectos del enfoque de co-creación en el contexto universitario se analizan a través de una revisión de la literatura.

El objetivo del artículo es examinar la relación teórica existente entre las diferentes variables que están presentes en el proceso de co-creación en las instituciones de ES. Dado que estas relaciones están presentes durante la co-creación del valor, es importante conocer el efecto real que este elemento tiene en el comportamiento de los clientes, con el fin de fomentar la satisfacción del estudiante. Son varios los beneficios de la co-creación, entre los cuales se encuentra la promoción de la

comunicación entre los actores involucrados, el crecimiento de la productividad, así como la reducción de costes en las organizaciones.

Uno de los retos de las instituciones de educación superior es llevar a cabo la transición de los métodos tradicionales centrados en el profesor, hacia una nueva perspectiva centrada en los estudiantes, lo cual implica mayores niveles de colaboración. En este contexto, la co-creación es analizada como un nuevo enfoque innovador que ayuda a modificar los procedimientos actuales y también ofrece a los estudiantes mejores oportunidades frente al mercado laboral.

Las variables involucradas en el estudio de revisión bibliográfica son la participación comunicativa, la co-creación y la satisfacción. Los principales pasos incluidos en la metodología se basan en la identificación de las bases de datos, la selección de las palabras claves, el rango de tiempo de los artículos a considerar, la inclusión de palabras claves secundarias, la lectura de los resúmenes de los artículos del primer filtro, la eliminación de estudios redundantes y la búsqueda manual y personalizada de determinadas investigaciones.

Los resultados teóricos muestran un efecto positivo de la colaboración de los estudiantes (como clientes), además de un alto impacto de la co-creación en la satisfacción de los mismos. Por último, se recomienda analizar en investigaciones futuras dichas relaciones existentes, pero a través de la utilización de técnicas cuantitativas para reforzar las implicaciones de la co-creación en el comportamiento académico.

5.2 Co-creation in Undergraduate Engineering Programs: Effects of Communication and Student Participation

Teniendo en cuenta la alta competitividad de este sector, el enfoque de co-creación se analiza como una alternativa para desarrollar ventajas competitivas en el mercado. En este sentido, la co-creación contribuirá a incrementar la calidad de servicio en el sector de ES, especialmente teniendo en cuenta la inclusión, participación y colaboración de los estudiantes en las diferentes actividades y procesos emprendidos por la institución.

El objetivo del estudio se basa en analizar el enfoque de co-creación como una solución de gestión en estas IES, al considerar la colaboración estudiantil en los procesos universitarios. Se evalúa empíricamente el modelo teórico que incluye tres constructos -comunicación, participación y co-creación- de estudiantes en el contexto de los programas de grado. El instrumento de recolección de información utilizado fue una encuesta aplicada a 325 estudiantes de ingenierías, y los principales análisis estadísticos incorporados fueron el AFE, AFC y SEM.

Los resultados de la investigación verifican que la participación y la comunicación de los estudiantes tienen una influencia significativa y positiva en la co-creación como

generador de satisfacción de los estudiantes, especialmente en este contexto. Una visión de co-creación en la ES desde la perspectiva de que los estudiantes son el centro del proceso de aprendizaje refuerza los principios de calidad de la educación de una manera innovadora. El artículo concluye con diferentes implicaciones gerenciales del estudio, incluyendo la efectividad de la creación de canales de participación y comunicación entre la universidad y los estudiantes con el objetivo de promover la co-creación como alternativa gerencial.

5.3 Revisión Sistemática de Literatura de las Variables Claves del Proceso de Co-creación en las Instituciones de Educación Superior

La co-creación de valor ha sido aplicada a la gestión de la innovación a través del fomento de las interacciones y de la creación conjunta de valor entre las diferentes partes interesadas. Dicha perspectiva ha sido abordada con mayor fuerza en el ámbito empresarial, no siendo aplicada en profundidad en el contexto universitario. Es por ello que este artículo se centra en desarrollar una revisión de literatura en el concepto de co-creación de valor aplicada a las IES, enfocándose específicamente en la interacción entre el estudiante y la universidad.

Esta perspectiva de co-creación de valor en las universidades está en correspondencia con las nuevas tendencias de enseñanza-aprendizaje en la universidad, en la cual los profesores dejan de ser el centro del proceso pasando a ser solo una parte del mismo. A través de una transformación del modelo tradicional de ES, el cual se centraba en el alumno como receptor del servicio ofrecido por las IES; en la nueva modalidad el alumno pasa a tener un papel más activo convirtiéndose en responsable de su aprendizaje, desarrollando el profesorado un rol de mediador.

De esta forma, los estudiantes no se limitan solamente a recibir lecciones, sino que participan activamente en el proceso de creación de valor a fin de adquirir conocimientos y de desarrollar otras competencias transversales necesarias para su posterior integración laboral. Este cambio convierte a los estudiantes en la columna vertebral del proceso de co-creación de valor; proporcionando la investigación un marco conceptual que respalda futuros estudios de co-creación en las instituciones universitarias.

A lo largo del artículo se refuerzan teóricamente las relaciones entre diferentes factores claves, los que se encuentran vinculados con la co-creación del valor, como son: la participación comunicativa, confianza, satisfacción y lealtad. Es por ello que el objetivo del estudio se basa en identificar hasta qué punto dichos factores son relevantes en un modelo de co-creación de valor en entornos de ES.

La metodología aplicada se basa en una revisión bibliográfica, de la cual se obtuvo como resultado la identificación de 111 documentos relevantes relacionados con el tema abordado, los cuales confirmaron la existencia de vínculos fuertes entre los

principales factores. Como resultados relevantes se identifica que el factor que mayor influencia presentó sobre la co-creación fue la participación comunicativa, lo cual confirma el fuerte vínculo entre estas dos variables, desarrollando principalmente una relación unidireccional. Igualmente se constata que la confianza, la lealtad y la satisfacción de los clientes/ estudiantes son resultados de ambiente co-creadores.

Finalmente quedan fundamentadas teóricamente las relaciones existentes entre los diferentes factores, evidenciando el alto impacto positivo que tendría la co-creación en la universidad, así como sus principales generadores.

5.4 The Impact of Co-creation on the Student Satisfaction: Analysis Through Structural Equation Modeling

El objetivo de este estudio es aplicar la co-creación como una herramienta de marketing en el contexto de los programas de grado en instituciones universitarias. La co-creación se propone como una solución para aumentar la satisfacción de los estudiantes de ES. Como la misma tributa al fortalecimiento de las interacciones entre los diferentes grupos de interés, es posible de esta forma fomentar los lazos de colaboración entre ellos. Tomando en cuenta que dicho enfoque facilita la generación de valor a través del involucramiento activo del alumno durante los procesos de servicio, desarrollar una ventaja competitiva frente al mercado se convierte en un resultado alcanzable de esta estrategia.

En el artículo se analizan las interacciones que se producen entre algunos factores durante los procesos en los cuales los estudiantes colaboran con la universidad. Los factores analizados son la participación, la comunicación y la satisfacción, y se profundiza en cómo estos se interrelacionan con la co-creación. Primeramente se identifican las conexiones teóricas existentes que sustentan la relación entre la comunicación y la participación, entre la participación y la co-creación, entre la comunicación y la co-creación; y entre la co-creación y la satisfacción.

Se aplican como técnicas cuantitativas el AFE, AFC y SEM para validar las hipótesis planteadas. La investigación permitió confirmar un modelo de co-creación, considerando que la participación y la comunicación fueron los promotores de la misma, teniendo igualmente la co-creación un alto impacto en la satisfacción de los estudiantes.

Este modelo reafirma la importancia de implementar un cambio en la práctica de la gestión centrada en la co-creación. Como resultado se verifican los efectos positivos de desarrollar este tipo de estrategia con la finalidad de aumentar la colaboración y satisfacción de los estudiantes.

5.5 Co-creation Impacts in Student Loyalty

Siguiendo la lógica dominante del servicio en la co-creación, el objetivo del artículo es estudiar este enfoque en el ámbito universitario con el fin de promover esta alternativa como una solución estratégica innovadora. De este modo, los efectos de la co-creación sobre la confianza y la lealtad de los estudiantes se analizan desde la perspectiva de la lógica dominante del servicio.

Considerando a los estudiantes como actores importantes en el desarrollo académico, se define un modelo de co-creación centrado en los mismos. Después de confirmar teóricamente las relaciones existentes entre la co-creación, la confianza y la lealtad a través de una revisión bibliográfica, se valida el modelo propuesto con la utilización de técnicas estadísticas.

Los resultados obtenidos remarcan que la co-creación tiene un impacto mayor en la confianza que en la lealtad en estudiantes de grado. Igualmente se confirma que la confianza del estudiante en la institución tiene un impacto positivo en la lealtad. Estos hallazgos fundamentan la eficacia de la co-creación en el mundo universitario.

Se recomienda investigar en futuros estudios el impacto que puede tener la diferencia de género, así como las áreas de especialidad de los estudiantes en un entorno co-creador.

5.6 Co-creation at Higher Education Institutions

La presente investigación se centra en la aplicación de la co-creación en las IES, con el objetivo de implementar herramientas de gestión en el contexto universitario. Teniendo en cuenta que la co-creación nace cuando las partes interesadas tienen una participación activa desde la fase inicial de generación de ideas, el estudio se centra en el ámbito universitario, considerando al estudiante como un generador de valor en el campo académico.

La situación actual nos muestra estudiantes cada vez más informados y con mayores capacidades de movilidad, fomentándose así la internacionalización de la educación. Igualmente los estándares de calidad en el mercado de la educación se han incrementado, siendo los clientes (estudiantes) más exquisitos y exigentes. En este sentido, las IES necesitan re-evaluar sus misiones y estrategias, en aras de sobrevivir y desarrollar ventajas competitivas.

Es por ello que resulta conveniente evaluar la posibilidad de aplicar el enfoque de co-creación en el ámbito universitario, para mejorar la gestión académica, centrando la atención en la participación de los estudiantes y su colaboración.

En el artículo se identificaron y estudiaron diversas variables que interactúan durante los eventos co-creadores, como son la participación, la comunicación, la confianza y la satisfacción. Las herramientas estadísticas aplicadas fueron principalmente el AFE, AFC

y SEM, con el fin de validar el modelo propuesto. Dicho modelo incluye las variables mencionadas anteriormente y las interacciones entre ellas.

Como resultado se obtuvo que la aplicación de la co-creación en el contexto universitario ofrece una nueva forma de gestión, evidenciándose en el aumento de las tasas de confianza y satisfacción de los estudiantes.

CHAPTER II

CO-CREATION IMPACTS ON STUDENT BEHAVIOR

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Title: Co-creation impacts on student behavior.

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ABSTRACT

Co-creation is a new trend in business context aimed at fusing all the stakeholders, specially customers in different phase of creation and production of products and services (Bowonder, Dambal, Kumar & Shirodkar, 2010; Muñiz & Schau, 2011; Prahalad & Ramaswamy, 2004a; Ramaswamy & Gouillart, 2010). Within this paper, the effects of co-creation approach at the university context are analyzed through a literature review. The objective is to examine the existing relationship among different variables which are present at co-creation process in higher education institutions. The studied variables are communicative participation, co-creation and satisfaction. The results show a positive impact of students' collaborations (as customers) on value co-creation; in addition of a high impact of cocreation on students' satisfaction. Finally, as a future research, it is suggested to carry out, using quantitative techniques, to bolster co-creation implications on scholar behavior.

Keywords: Co-creation, communicative participation, satisfaction, higher education.

1. Introduction

Nowadays, the level of information demanded by consumers is increasingly high while requiring higher value added services (Prahalad & Ramaswamy, 2004a). Value co creation, due to customers' involvement since the initial phases of ideation of services and/or products creation, has been modifying the traditional concept of business (Gustafsson, Kristensson & Witell, 2012). Co-creation can offer strategic advantage providing unique services designed by the customers (Bolton & Saxena-Iyer, 2009; Witell, Kristensson, Gustafsson & Löfgren, 2011). In order to implement this perspective, companies shape their channels to create solid links with stakeholders, being active customer participation and collaboration one of the primary functions (Ramaswamy & Gouillart, 2010).

The main aim of this piece of research is to analyse co-creation approach within higher education (HE) institutions, while studying existing models in order to understand the relationship among the most commonly studied variables, such as communicative participation, co-creation and satisfaction. Since these relationships are present during the cocreation of value, it is important to know the real effect that this concept have on customers' behaviour, in order to foster the student's satisfaction. Some of the co-creation's benefits are the promotion of communication among the stakeholders involved, the productivity growth (Rexfelt et al., 2011), or the organizations' cost reduction (Auh, Bell, McLeod & Shih, 2007).

In the particular case of higher education institutions, one of the challenges to be faced is to make the necessary transition from traditional methods professor-centered, to a new perspective focused on students which implies higher levels of collaboration. At this point, co-creation is analyzed as a new innovative approach, which helps modify the current procedures and also provides students of better opportunities on the labour market powers (Velasco, 2014).

2. Methodology

The methodology applied was systematic literature review, in order to validate and confirm the relationship existing between communicative participation and co-creation, and co-creation and satisfaction. The review included published papers since 2004 to the present. The review process followed 7 decision-steps:

- Initial search in ISI Web of Knowledge, EBSCO and ABI/INFORM ProQuest databases to find the most suitable journals related to the issue.
- Selection of the keywords: Co-creation or cocreation, co-production or coproduction.
- Determination of the data range: 2004-2015.
- Selection of papers published only in peer-reviewed journals.

- Until this phase, there were found 373 papers from ISI ISI, 47 from EBSCO, 5 from ProQuest.
- Search for a combination of secondary keywords: communicative participation, satisfaction, higher education institutions.
- Abstracts reading.
- Removing redundancies, remaining only the relevant papers to the study.

The final result of the process included 47 papers from ISI, 3 from EBSCO and 4 from ProQuest. Finally, a hand-searching was conducted and 22 extra relevant papers were included.

The reference manager software used was the Mendeley. The principal journals included were: Journal of Marketing, Advances in Consumer Research, Research in Higher Education, Business Horizons, Computers and Education, Harvard Business Review, Strategy & Leadership, IEEE Transactions on Professional Communication, International Journal of Educational Management, Journal of Business Research, Journal of Service Research, Journal of the Academy of Marketing Science, Research in Higher Education.

3. Findings of the Study

Co-creation approach with direct collaboration and customer engagement, both in the service and production sectors, allows final product/service to be obtained according with consumer requirements. Throughout the literature review, factors and concepts involved in the co-creation process has been found. The most commonly used factors in literature are customer participation and involvement, precise communication and transparent feedback. There other issues, also quite frequent: quality of product-service provided, and the influence of the aforementioned factors on customers' satisfaction and loyalty.

Prahalad and Ramaswamy (2004a) created the DART model (dialog, access, risk and transparency), considering what they labeled as the most important elements of co-creation process. In their study, Berthon, Pitt and Campbell (2009) also reflect about how branding co-creation facilitates the understanding of the criteria and the necessity to involve all stakeholders.

The main novelty that brings co-creation is that the customer becomes an active agent with an important role since the initial phases of ideation (Witell et al., 2011). Researchers such as Vargo and Lusch (2004) refer to co-creation with a perspective of service-centered dominant logic, affirming that the value is created by customers. Management of the stakeholders' communications and mutual knowledge is important, due to the need for understanding what customers are really seeking (Berthon et al., 2009). Bolton and Saxena-Iyer (2009) analyzed clients' participation in interactive services, identifying two measurements: the extent to which the customer

participates and the extent to which technology is utilized in the creation and delivery of the service.

One of the challenges to be faced by adopting co-creation approach is to be able to change roles of the involved actors due to the necessity of new types of design environments. Rexfelt et al. (2011) propose different actions to be considered at the three phases of the innovation process (exploration, creation and evaluation phase). For example, at the exploration phase, they recommend to learn about customer problems, and they suggest a structured method based on the validity, understanding, severity, frequency, generality, and evolution of the problems.

Analyzing co-creation implementation, variables such as communicative participation and satisfaction, are identified. These variables interact during co-creation process. In the following subsections the relationship among them are analyzed.

At the university context it is important to strengthen the interactions among the students, teacher, staff and the community with the objective to enhance the learning experiences and to accomplish the student expectations (Pinar, Trapp, Girard & Boyt, 2011). The co-creation approach is possible to apply at this scenario, where stakeholders like students and professors are involved in different academic activities, and the students have a protagonist role during the teaching-learning process. With this co-creative perspective, the students gain more responsibility and the teacher a facilitator of learning. Some positive results of this interaction are the enhancement of program adaptation, the learning flexibility and the facilitation of learner control (Bowden & D'Alessandro, 2011). Another's positive outcomes of this collaboration are the positive impact in curriculum design process, where the students have an active participation (Bovill, 2014); as well they can improve their knowledge and skills allowing the co-creation of knowledge (Yeo, 2009).

The positive effect of co-creation at postgraduate programs has been already demonstrated in studies such as Peralt-Rillo and Ribes-Giner (2013), Ribes-Giner et al. (2014), or Ribes-Giner and Peralt-Rillo (2016). They also have identified different tools used in this context.

3.1. The Relationship between Communicative Participation and Co-creation

Communicative participation includes supportive collaboration between consumers and firms with a high degree of dialogue. Thanks to this collaboration it is possible to maintain good argumentation and to cull ideas from each part, reducing the likelihood that ambiguities may emerge (Rodina & Chekushkina, 2015). On the other hand, communicative participation enables co-creation growth, reinforcing collaboration between firms and customers (Shaw, Bailey & Williams, 2011). Thus, participation, as an important property of co-creation, stimulate the formation of value with the cooperation of all stakeholders (Lee, Olson & Trimi, 2012). During the service delivery,

the client participation is essential, thus, it is not possible to separate the production phase from the consumption phase when we are talking about services (Ordanini & Pasini, 2008), as it is the case of Higher Education institutions.

Positive impact of collaborative participation on co-creation has been remarked by many authors as for instance Auh et al. (2007), Bendapudi and Leone (2003), Devasirvatham (2012), Dong, Evans and Zou (2008), Etgar (2008), Greer and Lei (2012), Gruner and Homburg (2000), Grisseemann and Stokburger-Sauer (2012), Gustafsson et al. (2012), Lundkvist and Yakhlef (2004), Mulder and Stappers (2009), Muñiz and Schau (2011), Prahalad and Ramaswamy (2013), Prahalad and Ramaswamy (2004a), Rajah, Marshall and Nam (2008), Sanders and Stappers (2008), Timmis (2012), Witell et al. (2011) and Ramaswamy and Gouillart (2010).

Analyzing specifically at HE context, the educational services involve students, professors and the staff; having students (as customers) an active role in the different interactions. It is important to highlight that the new educative trends are focused on teachers as coordinators and collaborators in the teaching & learning activities, having the students a greater responsibility in their learning process. This student-centered approach, giving students a protagonist participation, allows to achieve satisfactory results in “both pedagogical and business outcomes” (Bowden & D'Alessandro, 2011, p. 36). Another advantage of this relationship is the learner control, the improvement of program adaptation, and the learning flexibility (Bowden & D'Alessandro, 2011). Also, it has been remarked that when the student collaborates in curriculum design, the satisfaction levels increase positively (Bovill, 2014), and the students' knowledge and skills are also improved (Yeo, 2009).

3.2. The Relationship between Co-creation and Satisfaction

Satisfaction is well known as the positive reaction “to the state of fulfillment, and customers' judgment of the fulfilled state” (Kim, Park & Jeong, 2004, p. 148). Satisfaction benefits are countless, because it has a favorable impact on customer loyalty, diminish customer churn and limit price sensibility. An important issue about satisfaction is linked to the efforts to improve loyalty and customer retention and, therefore, contribute to increase the firms' revenues (Stauss & Neuhaus, 1997).

Among the different benefits of co-creation, the ability to garner a higher level of satisfaction is seen as one of the most important ones (Prahalad & Ramaswamy, 2013). A marketer objective is to identify “new ways of understanding customers' value creation” in order to increase the client satisfaction, and make the co-creation an effective alternative (Grönroos, 2008, p. 298). On the other hand, in their studies, Grisseemann and Stokburger-Sauer (2012) confirm a model where co-creation has a direct effect that co-creation on satisfaction; been explained this relationship by the client's performance during the participation process. Füller, Hutter & Faullant (2011) studied the co-design in virtual co-creation platforms, remarking the importance of the

autonomy toward user satisfaction in order to increase their involvement. Dong et al. (2008) analyzed the impact of the recovery process in self-service technology circumstances where, thanks to the co-creation collaboration, firms assure positive values of customer satisfaction. There are several studies that emphasize the high impact that co-creation have on satisfaction such as Auh et al. (2007), Bowonder et al. (2010), Dong et al. (2008), Ho et al. (2014), Ordanini and Pasini (2008), Rajah et al. (2008), Terblanche (2014) and Ramaswamy and Gouillart (2010).

At the university context, the student satisfaction refers to “a short term attitude which arises from the students' evaluation of the educational experience, which is subjective in nature” (Bowden & D'Alessandro, 2011, p. 38). The co-creation approach allows HE institutions to know what the client/student need, and therefore enables the institution to deliver a valuable learning experience increasing the student satisfaction (Bowden & D'Alessandro, 2011). Higher levels of satisfaction at HE lead to revenue increase, loyalty, cost reduction and continued education. The student engagement in co-creating the curriculum, for instance, increases satisfaction of professors, and students (Bovill, 2014). Exceeding student's expectations fosters their satisfaction and loyalty (Pinar et al., 2011). Makkar, Gabriel & Tripathi (2008) suggest a modification to Porter's value chain, in order to adjust it better to the university reality. Through this adaptation, both students and the institution, are able to co-create value, satisfying the stakeholders. Finally, it has been demonstrated, at this context, that there is a positive psychological impact during the co-creation process on the satisfaction in undergraduate students (Ribes-Giner & Peralt-Rillo, 2014).

4. Conclusions

After conducting this literature review, it has been found collaborative participation as a main co-creation driver, as well satisfaction as one of the most important implications. The findings remark solid and positive links existing among this variables, demonstrating that co-creation is a feasible alternative to be implement as an innovative strategic in higher education context. When looking for an increase of competitiveness levels, companies and particularly, HE institutions may consider value co-creation approach as a way to assure customer/student involvement at different phases in service creation/production/delivery; with the objective to reduce cost, and to increase satisfaction, trust and loyalty.

Through the systematic literature review it was confirmed the scarcity of literature dealing with the co-creation approach at higher education context, as innovative management solution. In future research, we suggest to analyze in deep, using for instance quantitative techniques, the relationship among the abovementioned variables, even including others variables such as loyalty and trust. Also, the context of the higher education institutions remains in analysis as a study case, in order to

deepen in student approach as a key stakeholder in the different academic process. At this point, it can be affirmed that although it seems that co-creation could have positive results on student/customer behaviour, this approach, particularly in HE institutions, has not been studied in depth.

CHAPTER III

CO-CREATION IN UNDERGRADUATE ENGINEERING PROGRAMS: EFFECTS OF COMMUNICATION AND STUDENT PARTICIPATION

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ABSTRACT

The purpose of this study is to analyze the impact of participation and communication of students in co-creation within the context of Higher Education institutions. This co-creation approach is evaluated as an alternative in engineering education, being useful for leading the educational process, research activities, administration support, and the community-industry relationship. A previous literature review was carried out to identify the theoretical confirmation of the relationship between the identified parameters (communication, participation, and co-creation), and a questionnaire was applied to 325 engineering students from 12 Ecuadorian universities with the objective of studying their behavior toward collaborative practices. The principal statistical tools used were exploratory and confirmatory factor analysis and structural equation model. The results verify that engineering student participation and communication have a significant and positive influence on co-creation as a generator of student satisfaction, especially in the study context. A co-creation vision at higher education - from the perspective that students are the center of the learning process - reinforces the education quality principles in an innovative way. The article concludes with the different managerial implications of the study, including the effectiveness of creating participation and communication channels between the university and engineering students with the objective of promoting co-creation as a managerial alternative.

Keywords: Engineering students, co-creation, higher education, participation, communication, structural equation modeling.

1. Introduction

Service quality is an important topic in higher education institutions that aim at competitiveness (Baig, Abrar, Ali & Ahmad et al., 2015; de Jager & Gbadamosi, 2013). This focus on quality allows universities to enhance students' satisfaction, meet the needs and expectations of the community, and maintain certain standards and rank in the face of competition in this sector (Bowden & D'Alessandro, 2011; de Jager & Gbadamosi, 2013).

This approach has been implemented in a large number of universities (Ribes-Giner & Peralta, 2015; Díaz-Mendez & Gummesson, 2012). This particular study is focused on Ecuadorian universities. In Ecuador, the current government has played a leading and revolutionizing role in several areas in which the educational field has been prioritized. The higher education (HE) system is experiencing a profound movement in which the search for innovative proposals has been strengthened in order to improve the education and teaching services. Due to this, Ecuadorian universities have driven changes when processes like the accreditation of institutions have been carried out to certify the universities' quality. In this context, in which Ecuadorian universities are looking for strategic perspectives to improve their performances, this study contains an analysis of a co-creation perspective as a generator of quality and engineering student satisfaction.

Co-creation has flourished in the business world based on service dominant logic, allowing clients and consumers to be involved from the starting point of idea and concept generation to the final creation of products and services (Prahalad & Ramaswamy, 2004a). This modern approach makes companies aware of what the client considers valuable (Bettencourt et al., 2013) through a collective creation (García et al., 2017), which leads to a competitive advantage in the market. Some benefits of co-creation are, for instance, productivity increases, cost reductions, or improvements in customer communication (Auh et al., 2007; Rexfelt et al., 2011).

Transferring this approach to HE and considering students as clients receiving the service that the university is offering (training to become graduates), co-creation can be applied within this context. In fact, students can be assimilated as clients in a co-creation context since they really, and should, interact in the whole process. In this strategy, institutions may become aware of what students consider valuable (Bettencourt et al., 2013). Given the current competitiveness of the HE sector, this strategy could also help institutions to identify how to gain a competitive advantage in the market. In this sense, co-creation is seen as an alternative that can help to increase the quality of service in the HE sector—particularly bearing in mind students' inclusion, participation, and collaboration in the different activities and processes undertaken by the institution. These processes refer to the involvement of students in teaching, research, local community activities, and administrative actions. In this sense, the

student is considered as an active participant of his own learning through more interactive and inclusive classes; also counting on his support for the design of his curriculum and course programs. Furthermore, the collaboration of students in research activities is strengthened, where he contributes to the generation and knowledge transfer through research and entrepreneurship projects, and with his involvement in practical industrial activities. In relation to the processes of linkage with the community, the student collaborates by applying his knowledge and skills in actions aimed at solving existing problems in the local area. Likewise, this co-creative approach in the field of HE is considered feasible by including students in administrative processes where they can interact with university staff and offer beneficial feedback in the different administrative activities where the student has a determined degree of participation. In this sense, it is necessary to analyze engineering programs to see whether they are susceptible to increases in participation and collaboration, targeting the development of co-creation of value. Considering the importance of enhanced technological - social intelligence and creativity on engineering programs, co-creation appears to be a solution to improve the practical training of these engineering students; as well as enhancing their abilities to socialize, work in groups, and gain a higher awareness about the realities of the industry.

In the present study, we focus on the aforementioned co-creation precursors in engineering degrees. Although this approach has been studied before (Peralt-Rillo & Ribes-Giner, 2013; Ribes-Giner et al., 2014), the researchers analyzed these relationships in postgraduate programs in the HE sector. The issues to be explored in this research are how students' participation influences the co-creation process, how communication with students affects co-creation, and how communication affects participation. Because this topic has not yet been analyzed in depth (Adomßent et al., 2014) for HE engineering degrees, the fundamental contribution of the present paper is an analysis of whether engineering students' participation and communication are generators of co-creation. If these suppositions are confirmed in the studied context, it could be argued that the studied precursors of co-creation are a valid alternative for enhancing the quality of HE services.

The document is structured as follows. In section 2, the principal generators of co-creation are analyzed through a literature review, deepening the theoretical relationship between communication and participation, participation and co-creation, and communication with co-creation. Section 3 contains a reflection on the applied methodology and the principal statistical tools used. Section 4 presents the empirical results of the multivariate analysis, and section 5 contains a discussion of the principal findings. Finally, the conclusions and contributions are outlined in section 6.

2. Literature Review. Co-creation Generators

Previous published studies have featured analyses of the main agents that generate the co-creation of value in the business context. For example, e-marketing is considered a generator of co-creation in the tourism industry, which is based on the integration of information technology and marketing, and connects stakeholders (consumers, vendors, employees, etc.) through systems. Thus, e-marketing allows the flow of electronic dialogues and the value co-creation through the information shared (Chuang, 2016). Likewise, the customers' participation and collaboration in the service offered by airlines, through self-service technologies, reinforces the co-creation of value as the users feel empowered when able to personalize their experiences through options such as online check-in (Chen & Wang, 2016).

Customer expertise and self-efficacy are also seen as two precursors of value co-creation. Their applications ensure effective collaboration since customers are able to make useful contributions. Other examples of co-creation precursors could be client expertise, affective behavior, client perceptions of interactional justice, and communication (Alves, Ferreira & Fernandes et al., 2016; Auh et al., 2007; Chen, Tsou & Ching, 2011; Chan, Yim & Lam, 2010).

Among the already identified precursors of co-creation, communication and participation were selected for analysis within the HE context. Even though these co-creation precursors have been studied previously (Lusch & Vargo, 2006; Prahalad & Ramaswamy, 2004a; Ordanini and Pasini, 2008), there is still a gap in the context of HE. Likewise, despite the fact that the links between them and co-creation have already been analyzed (Auh et al. 2007; Prahalad & Ramaswamy, 2004b; Etgar, 2007), there is no co-creation model relating to both precursors. This aim of this research is to fill this gap through an analysis of the relationship between communication, participation, and co-creation in the engineering degree context in an integrated model, in order to foster quality in HE.

The increasing competitiveness in the academic environment requires that universities enhance the use of marketing practices to improve the quality of their offers (Díaz-Mendez & Gummesson, 2012). Some of the most recommended alternatives being implemented in order to support the importance of student involvement are knowledge co-creation and the use of collaborative tools among students. The use of these practices (co-creation) at this level enables universities to deal with the challenge of having student perception as a central axis of universities' strategic policies and likewise enables them to promote engineering student commitment (Binsardi & Ekwulugo, 2003; Chia, 2011; Espinoza et al., 2002; Timmis, 2012; Umashankar & Dutta, 2007; Yeh, 2012).

At this point, it is important to remark on the difference between the three parameters studied: communication, participation, and co-creation. Participation is related to the support that institutions receive from their students through action (Rodina, 2015), and communication occurs in the form of conversations among the involved parties (Muñiz and Schau 2011), constituting the dialogue building-block of the Dialogue, Access, Risk, and Transparency (DART) model (Pralhad & Ramaswamy, 2004a). Co-creation is a more holistic vision that includes a strategy approach involving processes in which the different stakeholders collaborate to generate joint products and services (Muñiz & Schau, 2011).

The next section reinforces the theoretical relationships of these parameters (participation, communication and co-creation).

2.1. Communication and Participation

Given the relevance of communication in the active participation of clients in a service company, it remains necessary to analyze this same relationship between communication and participation in HE by considering engineering students as one of the main stakeholders. To date, previous works can be found that affirm how in-house communication has gained ground within marketing practices, evolving from one-way communication systems to truly participatory conversations between clients as key actors in innovation activities that act as co-creation (Vaisnore and Petraite, 2012). Through dialogue, more clarity might also be gained by companies in terms of identifying whether the product or service really meets customers' expectations. The use of communication technologies improves this interaction process and enables the development of new products propitiating collaborative work and eliminating geographical constraints (Kohler et al., 2009; Vaisnore & Petraite, 2012; Lusch & Vargo, 2006; Muñiz & Schau, 2011; Prahalad & Ramaswamy, 2004a; Tohidinia & Haghighi, 2011).

However, despite the identification of communication in the HE context as a preliminary factor encouraging the participatory processes in initiatives at universities (Disterheft et al., 2014), there is still a gap in the academic literature since it is not quantitatively evident whether the generation of communication channels with students encourages their participation and collaboration in institutions' activities. For this reason, the following hypothesis is proposed:

H1: Communication has a direct, positive impact on participation in the HE context.

2.2. Participation and Co-creation

The relationship between participation and co-creation has been demonstrated in contexts other than HE. In the business environment, customer participation enables a powerful stream of knowledge, successfully leading value co-creation. In this way,

companies can access a source of valuable information by learning from clients' approaches and perspectives. Some positive results of this interactions are that clients can contribute to process improvement through participation in the product life cycle and service development from the early stages, helping to decrease costs. In order to allow this participation and foster it, it is important to build internal and external structures to motivate customers. It is also essential to manage coordination skills to reduce the factors—such as cultural differences, partner's motivation, and possible conflicts—that may have a negative effect on this interaction process (Auh et al., 2007; Bendapudi & Leone, 2003; Etgar, 2007; Greer & Lei, 2012; Mulder & Stappers, 2009; Muñiz & Schau, 2011; Ordanini & Pasini, 2008; Yi & Gong, 2013).

Previous studies on this relationship in the HE context are much scarcer. Despite co-creation, co-design, and coproduction being identified as possible alternatives for engaging the stakeholders in learning program services (Disterheft et al., 2014; Molnar et al., 2010), it is necessary to strengthen the link between participation and co-creation in this context. For that reason, the second hypothesis is set as follows:

H2: Participation has a direct, positive impact on co-creation in HE.

2.3. Communication and Co-creation

In a business context, the relationship between communication and co-creation has been broadly demonstrated to be consolidated (Lundkvist & Yakhlef, 2004; Prahalad & Ramaswamy, 2004a; Prahalad & Ramaswamy, 2004b). Dialogue between companies and clients constitutes one of the building blocks of co-creation in the DART model, having an important influence on value co-creation. The information exchange activity increases clarity regarding what exactly clients want, and thus is essential for co-created products and services. This tendency has been empowered by communication technology (such as blogs, home video production, and e-distribution through web sites). It leads to efficient resource utilization between customers and suppliers. These channels have shortened the distance between firms and clients; therefore, consumers with more expertise and better computer skills will have a greater tendency to become involved in coproduction activities. In this way, communication allows customers to be in touch with a firm's procedures and norms, which facilitates client empowerment (Rajah et al., 2008, Auh et al., 2007; Gustafsson, Kristensson & Witell, 2012; Rexfelt et al., 2011; Witell et al., 2011; Payne, Storbacka & Frow, 2008; Yi & Gong, 2013; Etgar, 2007).

Unfortunately, in the HE context, this relationship between communication and co-creation has not yet been analyzed in depth. Because of the importance of verifying empirically that these ties are fulfilled in the HE context, the third proposed hypothesis is as follows:

H3: Communication has a direct, positive impact on co-creation in HE.

3. Sample and Methodology

This study covers 12 Ecuadorian universities. Initially, representatives from the research departments of 16 Ecuadorian universities were contacted via e-mail to determine their availability to participate in the present study; however, only 12 institutions showed an interest in collaborating. In some of these HE institutions, physical visits were carried out, and hence, a paper-and-pencil questionnaire was applied; at the institutions where physical access was not possible, the questionnaire was applied online through Google Forms. Finally, the questionnaires were administered to 325 engineering students between the third and the final semesters of their studies because those students already had a high degree of experience in the services offered by the university. The survey contained 14 items using a seven-point Likert scale from strong disagreement (1) to strong agreement (7). As Choi and Pak (2005) recommended, in order to avoid the respondents having a learning bias, the order of the questions was randomized in the different versions of the questionnaire. Accordingly, 10 versions of the same questionnaire were made in which the questions were asked in a different order.

Table 1 shows the characteristics of the student sample.

Table 1. Characteristics and Attributes of Student Respondents

Variable	Number	Percentage
<i>Gender</i>		
Man	303	77%
Woman	92	23
<i>Semester</i>		
3rd	90	22.8
4th	51	12.9
5th	39	9.9
6th	35	8.9
7th	81	20.5
8th	54	13.7
9th	45	11.4
<i>Career</i>		
Industrial Engineering	73	18.5
System Engineering	66	16.7
Architecture	20	5.1
Mechanical Engineering	75	19.0
Electrical Engineering	64	16.2
Electronic Engineering	58	14.7
Chemical Engineering	39	9.9

First, the Exploratory Factor Analysis (EFA) technique was applied to confirm the existence of scales in the instrument (Gorsuch, 1997) in the engineering degree context and to prove the construct's validity. The EFA confirmed the existence of the three principal components suggested by the authors. The SPSS program—a software package that is principally applied in the social sciences—was used to conduct the exploratory analysis.

The applied technique for hypothesis validation and model confirmation was structural equation modeling (SEM) (Devasirvatham, 2012; Hox & Bechger, 1998; Rajah et al. 2008; Palma & Sepe, 2016), and the SPSS Amos (Analysis of Moment Structures) module was utilized. Hox and Bechger (1998) maintained that SEM is fundamentally used for behavioral analysis; it is a popular technique that allows the establishment of relationships between the theoretical constructs of a research study (Neelaveni and Manimaran 2016). SEM was based on a confirmatory factor analysis (CFA), and in this step, some indicators were developed to analyze the reliability, and the convergent and discriminant validity. The composite reliability (CR) was used to assess the reliability of the latent construct. The CR indicator was analyzed by (1):

$$CR_i = \frac{(\sum \lambda)^2}{(\sum \lambda)^2 + \sum(\theta)} \quad (1)$$

where λ is the factor loadings and θ is the error variances (Fornell & Larcker, 1981), which has been recommended for values higher than 0.7.

In order to evaluate the convergent validity, the average variance extracted (AVE) was analyzed, This shows how much the variance of the construct is explained by the chosen indicators (Fornell & Larcker, 1981) and was been studied through (2):

$$AVE_i = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum(\theta)} \quad (2)$$

The recommended range for this measure is a value higher than 0.5.

The discriminant validity was also analyzed to check that each construct was significantly different from the rest of the constructs with which it was unrelated, according to theory. The premises to comply with the discriminant validity are that the maximum shared variance (MSV) and the average shared variance (ASV) should both be lower than the AVE and that the square root of the AVE should be greater than the correlations among the constructs.

The principal model fit measures incorporated were the Chi-square/Degree freedom (CMIN/DF), which was recommended for values less than 3; the comparative fit index (CFI), which was recommended for values higher than 0.95; the root mean-square error of approximation (RMSEA), which was recommended for values less than 0.05;

and the adjusted goodness-of-fit index (AGFI), which was recommended for values higher than 0.8. The last analysis developed was for the mediation by participation in the relationship between communication and co-creation. As Little et al. (2007) commented, it is important to investigate the influence of mediation between the variables in the model.

3.1. The Proposed Model

Fig 1 depicts the hypothesized model, which shows the connections among participation, communication, and co-creation. The foundations for this model were established in the literature review through the examination of the pre-existing links.

Several items were used to measure the constructs of participation, communication, and co-creation that were extracted from previous surveys. In particular, for “participation,” four items were extracted from Chan et al. (2010); for “communication,” six items were taken from the work of Tohidinia and Haghghi (2011) and for “co-creation,” four items were taken from Devasirvatham (2012), Rajah et al. (2008) and Ribes-Giner and Peralt-Rillo (2015). It is important to highlight that all of these surveys, which have been previously applied, came from studies carried out in different contexts, such as the professional financial sector (Chan et al., 2010; Tohidinia & Haghghi, 2011), and scenarios based on travel agency services (Devasirvatham, 2012; Rajah et al., 2008). Only Ribes-Giner and Peralt-Rillo’s (2015) applied their survey in academia, but their research was focused on master’s students. The questions extracted from the primary studies discussed above, were translated into Spanish and adapted according to the language and the proper understanding of engineering students. Through this action, the understanding of the survey was ensured. For the validation of the instrument the AFE was applied. Although the survey was made up of questions that have been validated in previous studies, the instrument was validated again because the questions being used to measure the different factors (participation, communication, and co-creation) came from different investigations within other contexts, and in particular due to the fact that Ecuadorian universities have particularities such as language or culture. For that reason, another contribution of the present investigation is the adaptation and validation of a final survey for engineering students.

In correspondence, the observed variables (endogenous) were as follows.

- Participation1 (I put a lot of effort into expressing my personal needs to the staff during the service process).
- Participation2 (I always provide suggestions to the staff for improving the service outcome).
- Participation3 (I have a high level of participation in the service process).

- Participation4 (I am very much involved in deciding how services should be provided).
- Communication1 (The information provided by the university can be trusted).
- Communication2 (In case of any problem, the university provides me with enough information).
- Communication3 (University exchanges enough information about the service itself).
- Communication4 (University allows me to have interactive communication with it).
- Communication5 (University provides me with multiple ways to contact it).
- Communication6 (University maintains regular contact with me).
- Co-creation1 (Overall, I would describe my relationship with this university as involving a high level of co-creation).
- Co-creation2 (The final purchase solution was arrived at mainly through a joint effort between the university and I).
- Co-creation3 (What I receive from this university is due to work jointly between the university and students).
- Co-creation4 (I contribute actively to the final solution in the educational service I receive).

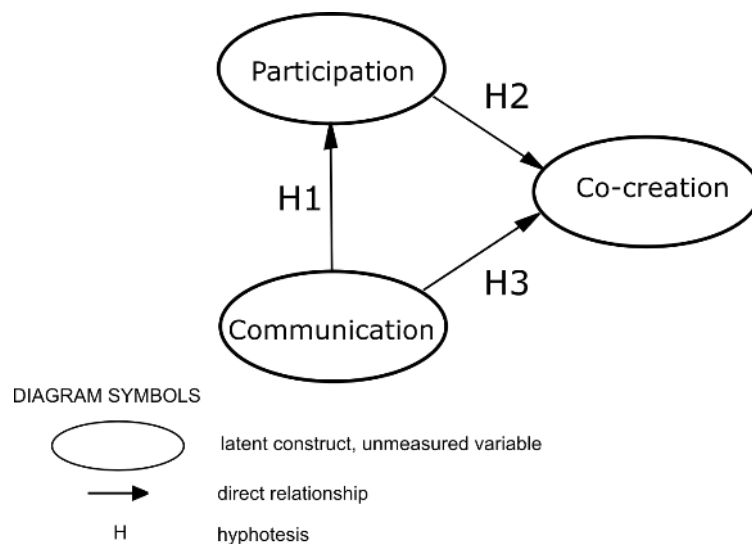


Figure 1. Research Model

4. Empirical Results: The Multivariate Analysis

4.1. Exploratory Factor Analysis for Instrument Validation

The results of the first EFA iteration appear in the left column of Table 2 with the maximum likelihood method using varimax rotation with Kaiser normalization and three fixed components. The table shows the analysis of loadings for items above 0.40, with three items cross-loaded (Communication1 - the information provided by the university can be trusted; Communication2 - in case of any problem, the university provides me with enough information and Communication6 - the university maintains regular contact with me). The Kaiser-Meyer-Oklin (KMO) value is 0.934 (higher than 0.5), and the Bartlett test has a $p=.000$. The Cronbach's alpha is 0.916, indicating homogeneity in the instrument's consistency, and the three principal components explained 64.7% of the total variance.

After this analysis, the item Communication1 was eliminated because it had a difference loading of under 0.1 (0.484 for component1 and 0.504 for component2). The items Communication2 and Communication3 had loading differences above 0.1 and the highest values for the construct relative to communication, which corresponds well with the theoretical approach; they were not removed from the analysis. Dropping the problematic item (Communication1) allowed the second EFA iteration to be developed (Table 2, right). The new EFA revealed few variances with the KMO value dropping to 0.911 (an excellent value) and the Bartlett test remaining with a $p=.000$. The Cronbach's alpha had a good value (0.911), and the three principal components now explained 66.42% of the total variance.

Table 2. EFA Analysis

	EFA-First Iteration			EFA-Second Iteration		
	Components			Components		
	1	2	3	1	2	3
par1			0.685			0.676
par2			0.785			0.794
par3			0.647			0.613
par4			0.745			0.763
com1	0.484	0.504				
com2	0.429	0.550			0.559	
com3		0.811			0.811	
com4		0.659			0.670	
com5		0.696			0.695	
com6		0.637	0.423		0.657	
cocre1	0.796			0.802		
cocre2	0.829			0.833		
cocre3	0.716			0.723		
cocre4	0.754			0.760		

Cronbach`s Alpha	0.890	0.850	0.783	0.890	0.837	0.783
Cronbach`s Alpha (General)	0.916			0.911		
KMO	0.934			0.927		
Bartlett Test	$\chi^2 = 2865, 606; gl = 91$ $p = .000$			$\chi^2 = 2663.958; gl = 78$ $p = .000$		
Variance Explained	64.77%			66.42%		

4.2. Confirmatory Factor Analysis

The CFA was carried out with the 13 items defined after the EFA with a sample size of 325.

Fig 2 shows the last iteration analyzed. Various iterations were developed on the premise that those modifications would not interfere with the theoretical judgment. The results fitting the criteria improved in every iteration.

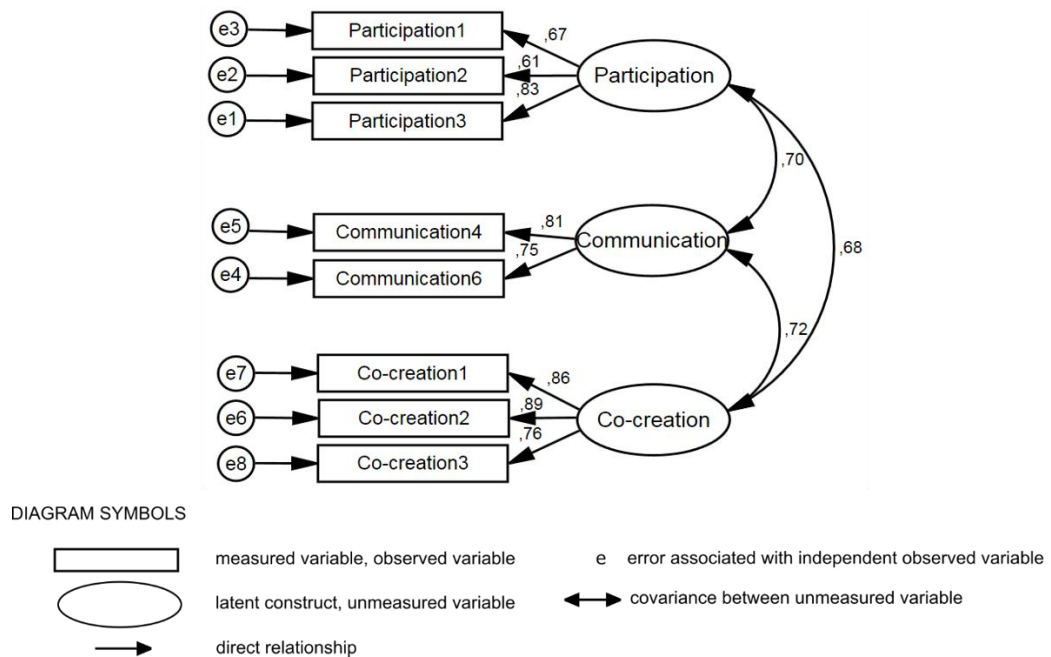


Figure 2. Last Iteration - Confirmatory Factor Analysis

Table 3 shows the correlations and covariances among constructs, and Table 4 reflects the factor loadings of each item and the principal indicators obtained. By analyzing the validity of the aforementioned measurement, we confirmed the reliability as well as the convergent and discriminant validity.

Table 3. Means, Correlations (above diagonal) and Covariances (below diagonal) between Construct and CFA

	Mean	Participation	Communication	Co-creation
Participation	4.660	1	0.701	0.683
Communication	4.915	0.806	1	0.716
Co-creation	5.440	0.803	0.812	1

Table 4. CFA Construct Validity

Constructs	Item	Factorial Loadings	CR	AVE	Square Root Of the AVE
PAR (Participation)	par1	0.666	0.747	0.501	0.708
	par2	0.611			
	par3	0.828			
COM (Communication)	com4	0.807	0.752	0.603	0.777
	com6	0.745			
COCRE (Co-creation)	cocre1	0.860	0.878	0.706	0.840
	cocre2	0.895			
	cocre3	0.760			

The CR values were higher than 0.7 for the communication, participation, and co-creation constructs in the model analyzed, confirming the model’s reliability. The AVE values for the three constructs were above 0.5, indicating the existence of convergent validity for the indicators and constructs; the variance captured by the constructs was larger than the variance due to measurement errors. In research on the discriminant validity, the square roots of two of the AVEs had higher values than the correlations among the inter-constructs. For example, participation and co-creation had AVE values of 0.747 and 0.878—the square roots of AVE being 0.708 and 0.840, respectively—and both values were higher than the correlation between participation and co-creation (0.683). The same occurred for the other construct relationships, demonstrating discriminant validity.

4.3. Path Diagram, Model Fit Measures and Mediation

Figure 3 shows the results of the SEM model in a path diagram. The principal results for model fit can be observed in Table 5.

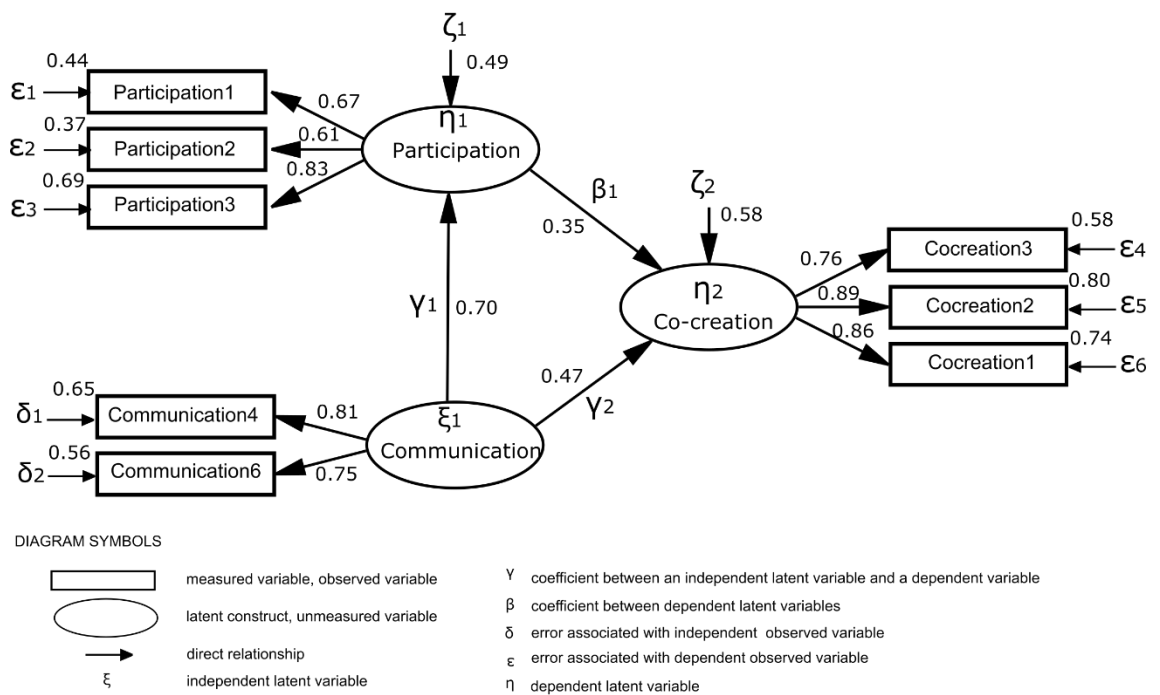


Figure 3. Effect of Communication and Participation in Co-creation

The model fit measures have perfect values (Table 5). CFI has an excellent value (0.983) over 0.95, and AGFI also has a good value (0.940>0.8). RMSR is under 0.09, and the RMSEA is reasonable.

Table 5. Structural Model Results and Model Fit Measures

Effects	Hypothesis	Stand. coeffic.	S.E	p-value
Communication -->Participation	H1	0.701	0.080	<0.001
Participation -->Co-creation	H2	0.355	0.092	<0.001
Communication -->Co-creation	H3	0.468	0.096	<0.001
Model Fit Summary SEM, N =325				
CMIN/DF=2,208(<3)				
CFI=0,983(>0.95)				
RMR=0,052(<0.09)				
RMSEA= 0,061(Moderate, >0.05)				
AGFI=0,940(>0.8)				
PCLOSE =0,223(>0.05)				

The squared multiple correlation (SMC) of the latent variable co-creation shows that 58% (SMC=0.577) of this element is explained by the direct effect of participation and the direct and indirect effects of communication. Half of the variance of participation (49%; 0.491) is explained by the direct impact of communication.

The three relationships under study had a significant and positive impact, as many authors had remarked; for example, communication under co-creation had a value of $\gamma=0.468$ (Auh et al., 2007; Gustafsson et al., 2012; Gruner & Homburg, 2000; Payne et al., 2008). Communication had the highest impact on participation ($\gamma=0.701$, p-value < 0.001) (Anderson & Narus, 1990; Lusch & Vargo, 2006; Vaisnore & Petraite, 2012), and participation also had a positive effect on co-creation, although with a smaller impact ($\beta=0.355$, p-value<0.001), supporting the relationship highlighted by authors such as Ramaswamy (2008), Etgar (2007) and Muñiz and Schau (2011).

Analyzing the mediation by participation in the relationship between communication and co-creation, we established three research statements:

- 1st situation: Communication has a direct effect on co-creation without the mediator.
- 2nd situation: Communication has a direct effect on co-creation with participation as a mediator.
- 3rd situation: Communication has an indirect effect on co-creation through participation.

The resulting analysis is presented in Fig 4 and Table 6. A partial mediation by participation between communication and co-creation exists, through which the direct influence between communication and co-creation is almost halved by the mediation of participation.

Table 6. Mediation of participation between Communication and Co-creation

Hypothesis	Direct effect w/o mediator (1stsit.)	Direct W mediator (2ndsit.)	Indirect effect (3thsit.)	Mediation Type observed
Partial mediation Communication- Participation- Co-creation	0.737(***)	0.468(*)	0.249(***)	Partial Mediation

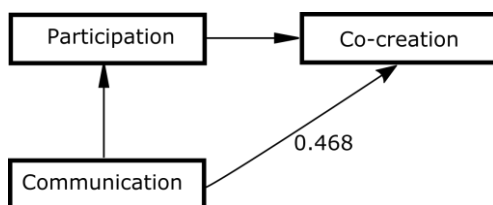


Figure 4(a). Without mediator

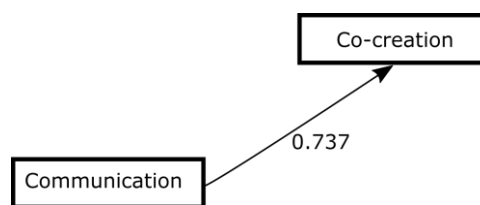


Figure 4(b). With participation as a mediator

Figure 4. Direct effect of communication on co-creation

5. Discussion

The validation of a co-creation model for engineering degrees was possible through a theoretical analysis carried out by means of EFA and SEM, confirming the existence of ties among participation, communication, and co-creation. The results were consistent with the three hypotheses proposed: communication has a direct, positive impact on participation; participation also has a direct, positive impact on co-creation, and communication has a direct, positive impact on co-creation in HE. The model validation thus supports these hypotheses.

Furthermore, the important and solid impact that communication has over participation in the academic environment has been demonstrated. In this sense, the establishment of links consolidates the ties between students and universities. Students not only need to know what happens during their education process at the university but also want to collaborate and take part in the system.

Likewise, the degree of communication existing between these two agents (university and students) is reflected in the co-creation experience in two ways. On the one hand, communication directly impacts co-creation when students receive oral or written information (collaboration during their teaching and learning processes; i.e., through the debate and the oral/written exchange of ideas and thoughts). On the other hand, communication also indirectly impacts co-creation through participation when the students have a more active role in their own educational training.

Through this research, it has also been shown that participation directly impacts co-creation, revealing the students' potential to have direct collaboration in generating the co-creators' approaches.

In this way, the principal contribution of this study is the demonstration that students' participation and communication are key drivers in the co-creation process in engineering degrees. Between communication and participation, the communication element stands out as having the greatest influence on co-creation. This occurs because the dialogue, as established by the DART model, is presented as one of the four angular elements in co-creation development. Certainly, in order to ensure effective collaboration /participation between the parties involved, there should first exist fluid communication that allows for information exchange in both directions. In this sense, it is also important to implement physical and digital channels that enable an appropriate communication flow, giving a voice to the students in different processes. In addition, participation was recognized as a co-creation driver, and the collaboration of students in activities—such as program and curriculum design, social projects related to the community, or lesson development—are essential for achieving this. When students are involved in the different activities developed by institutions, in addition to reinforcing knowledge about their needs, they are empowered to become

protagonists within the university processes in which they are immersed. Likewise, this co-creative approach favors the view that knowledge must be co-created among the different actors involved (Prudhomme et al., 2003).

Nowadays, HE institutions need to embrace marketing trends like co-creation in order to gain a higher share of the educational market (Pantoja et al., 2016). Through this study, it has been demonstrated that the implementation of this open innovation perspective in the Ecuadorian academic field may contribute to improving the quality of the services offered from the point of view of the students (as one of the relevant stakeholders) as well as to recognizing the importance of the opinions and involvement of the students at the engineering degree level. It has also been demonstrated that co-creation encourages the generation of students' skills necessary for future employability, thus providing the job market with better qualified professionals who have the abilities required by society.

6. Conclusions and Contributions

This study has proved the feasibility of developing an inclusive and collaborative approach in engineering schools in order to achieve co-creator styles. The solid and remarkable influence that participation and collaboration exerts on co-creation was demonstrated. It was also suggested that communication has a bigger influence on co-creation than participation, being therefore more important to reinforce firstly the communications channels. This value co-creation perspective contributes to the improvement of universities' quality by focusing on all the crucial factors that facilitate student collaboration. In this investigation, a survey for engineering students was also adapted and validated, which includes elements relative to the co-creation precursors (participation and communication), and co-creation results.

This investigation provides at the international level a confirmation that using correct communications channels with adequate participatory practices, it is possible to develop a co-creation environment, in this case involving engineering students in different university processes. Through this perspective, universities can improve their connections with students as a key stakeholder, thus enhancing their abilities and capacities, empowering them and giving them greater autonomy. Considering the existing gap on this subject at the academic-scientific level, this article contributes positively to eliminating the gap in the context of the behavior of engineering students toward co-creation practices.

However, there remains the necessity to analyze the impact of co-creation in the behavior of engineering students, addressing their influence on satisfaction, trust, and loyalty. Likewise, it is important to establish what the principal actions are that should be put into practice in order to achieve this co-creation perspective in this environment.

CHAPTER IV

REVISIÓN SISTEMÁTICA DE LITERATURA DE LAS VARIABLES CLAVES DEL PROCESO DE CO-CREACIÓN EN LAS INSTITUCIONES DE EDUCACIÓN SUPERIOR

Paper accepted for publication at TEC Empresarial.

Title: Revisión sistemática de literatura de las variables claves del proceso de co-creación en las instituciones de educación superior.

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ABSTRACT

Value co-creation has been broadly developed as a new paradigm in management innovation. It allows companies and customers to create value through interaction. However, it has not been examined in depth in Higher Education contexts as a type of service industry. The present paper clarifies value co-creation in Higher Education Institutions, analysing the relationships between key factors affecting it: communicative participation, trust, satisfaction and loyalty. A literature review was conducted, resulting in 84 relevant papers dealing with the studied topic. The study was focused on the micro level, and, specifically, it analyses the relation between students and Higher Education institutions as main actors of value co-creation within this context. This perspective corresponds to the new trends in university teaching-learning framework, where professors are no longer the heart of the process, to become just a part of it. This shift makes students the backbone of the value co-creation process. This study provides, among other things, a conceptual framework to endorse further works on value co-creation in Higher Education institutions.

Resumen

La co-creación de valor ha sido ampliamente desarrollada como un nuevo paradigma en la gestión de la innovación, permitiendo a empresas y clientes crear valor a través de las interacciones entre los diferentes stakeholders. Este enfoque ha sido principalmente abordado en el ámbito empresarial, no siendo aplicado en profundidad en el contexto universitario. Es por esta razón que el principal aporte del presente trabajo es profundizar, mediante una revisión de la literatura, en el concepto de co-creación de valor en Instituciones de Educación Superior centrándose específicamente en la interacción entre el estudiante y la universidad. De igual forma, se estudian las relaciones entre los diferentes factores clave involucrados: participación comunicativa, confianza, satisfacción y lealtad. El objetivo del estudio es identificar hasta qué punto dichos factores son relevantes en un modelo de co-creación de valor en entornos de

educación superior. Como resultado, se identifican 111 documentos relevantes relacionados con el tema abordado.

Esta perspectiva corresponde a las nuevas tendencias de enseñanza-aprendizaje en la universidad, en la cual los profesores dejan de ser el centro del proceso y pasan a ser solo una parte de este. Este cambio convierte a los estudiantes en la columna vertebral del proceso de co-creación de valor; proporcionando esta investigación un marco conceptual que respalda futuros estudios de co-creación en las instituciones universitarias.

Keywords: Co-creación, participación comunicativa, confianza, satisfacción, lealtad, educación superior.

1. Introducción

El modelo tradicional de educación superior (ES) se centra en el alumno como receptor del servicio ofrecido por las Instituciones de Educación Superior (IES). Así, el profesor transmite conocimientos a los alumnos, quienes son posteriormente evaluados con el objetivo de determinar el nivel de conocimiento adquirido al final del proceso de prestación del servicio. Este modelo, trasladado al entorno de economías de mercado, es equivalente al de una empresa en la que el servicio prestado es la transmisión de conocimiento al alumno/cliente (Díaz-Mendez y Gumerson, 2012). Sin embargo, los recientes cambios desarrollados en la ES han desplazado este enfoque hacia la misma dirección que otras empresas de servicios. Actualmente, el centro del servicio universitario no se basa en el profesor como transmisor de conocimiento, si no en el alumno como responsable último de su aprendizaje, jugando el profesorado un papel de mediador (García y Ruiz, 2014).

Este cambio desarrollado en la universidad se encuentra relacionado con la evolución de la infraestructura del conocimiento, donde la academia ha re-orientado su visión antigua de preservación y difusión del conocimiento hacia otra más abarcadora de transferencia de tecnología e innovación a través de la conexión con el gobierno y la industria. Es así que se han formado y consolidado lazos entre los sectores públicos, privados y académicos, con base en potenciar procesos innovadores (Etzkowitz y Leydesdorff, 1997). A través de esta triple hélice (universidad-gobierno-industria) se consolida el rol de la academia en la transferencia de la tecnología y en la formación de empresas a través de emprendimientos (Etzkowitz y Zhou, 2007; Leydesdorff, 2012). Este modelo de universidad emprendedora logra garantizar investigaciones con potencial comercial, generar start-ups, creando, dentro de la institución, un espíritu empresarial y de innovación.

Es así que la universidad se transforma en una incubadora de emprendimientos donde se generan soluciones a problemas del entorno, basada en redes que surgen de las relaciones entre docentes y estudiantes (Etzkowitz y Zhou, 2007). Bajo dicho esquema se re-orienta la función del estudiante, el cual comienza a involucrarse directamente en dichos procesos innovadores, siendo un actor clave dentro de la cadena emprendedora. Este nuevo enfoque empodera al estudiante al participar en el co-diseño y co-desarrollo de proyectos de innovación, y modifica el rol que tiene sobre su propio aprendizaje, pasando a tener un papel más protagónico.

Esta perspectiva se corresponde con la "co-creación de valor" en la que el estudiante forma parte activa junto a otros stakeholders de las IES, lo cual implica que el valor no es aportado por las organizaciones en sí mismas, sino que se requiere de la participación activa en un proceso conjunto de las parte interesadas, donde concretamente los clientes también juegan un papel activo a través de la interacción directa.

En términos de ES, esto implica que los estudiantes deben ser actores activos en el proceso de enseñanza-aprendizaje. Los mismos participan activamente en el proceso de creación de valor a fin de adquirir conocimientos y de desarrollar otras competencias transversales necesarias para su posterior integración laboral (Sicilia, 2010; Pepper 2011). En este proceso, factores como la participación comunicativa, la confianza, la satisfacción del estudiante y la lealtad afectan directamente el resultado final (Díaz-Méndez y Gumerson, 2012).

El presente trabajo se desarrolla a partir de otras revisiones bibliográficas efectuadas con anterioridad sobre la co-creación de valor. Es importante señalar que, aunque existen numerosos documentos de investigación sobre la co-creación de valor, en el ámbito de la ES son pocos los trabajos desarrollados, quedando lagunas en el modo de aplicar este enfoque en dicho contexto. En estudios anteriores, tales como Pantoja, Ribes-Giner y Perello-Marín (2016), se valida un modelo teórico con la aplicación de técnicas estadísticas donde se confirman las relaciones existentes entre la participación y la comunicación de los estudiantes con la co-creación, y los efectos de esta última sobre la satisfacción. Igualmente, en la investigación de Ribes-Giner, Perello-Marín y Pantoja (2016) se realiza una revisión escueta de la literatura. Dichas investigaciones, a pesar de que abordan los mismos componentes analizados en el presente artículo, no desarrollan con profundidad el área de la revisión bibliográfica. Por esta razón, a diferencia de los trabajos citados anteriormente, el presente artículo describe una revisión de la literatura sobre la co-creación de valor, específicamente en ES, destacando las relaciones entre los factores clave que la afectan. Es por ello que el presente artículo rellena estos vacíos existentes conceptuales por medio de una revisión bibliográfica más intensa. Dicha revisión contribuye a fomentar teóricamente la alta aplicabilidad del enfoque de co-creación del valor en el entorno universitario.

Con todo ello, el objetivo de este trabajo de investigación es doble. Por un lado, se realiza una revisión de la literatura a fin de profundizar conceptualmente en la co-creación de valor desarrollada por estudiantes en las IES; y, por otro lado, se explican las relaciones entre las variables clave de la co-creación en este contexto: participación comunicativa, confianza, satisfacción y lealtad.

2. Antecedentes Teóricos

El concepto de co-creación de valor ha sido desarrollado como un nuevo paradigma en la literatura de gestión en los últimos años, el cual permite a empresas y clientes crear valor a través de su interacción con las organizaciones. En particular, considera la colaboración de los clientes como la piedra angular en la creación de valor, reforzada dicha participación por canales de comunicación más sólidos (Bolton y Saxena-Iyer, 2009; Muñiz y Schau, 2011). Esta tendencia no sólo permite a las entidades aumentar el conocimiento sobre lo que los clientes consideran valioso (Bettencourt, Brown y

Sirianni, 2013), sino que también promueve la comunicación entre las partes interesadas (Rexfelt et al., 2011).

Galvagno y Dalli (2014) resumen y clasifican investigaciones previas para comprender mejor el estado pasado y actual sobre los estudios de co-creación. Ellos sostienen que la mayor parte de la literatura sobre este tema ha surgido en el seno de la gestión de servicios, donde existen estudios de gestión de la innovación, del marketing y de la investigación del consumidor que también han hecho contribuciones importantes. Bharti, Agrawal y Sharma (2015) profundizan en aclarar el término co-creación enmarcándolo en las siguientes categorías: ambiente del proceso, recursos, co-producción, beneficios percibidos y estructura de la gestión. Por otro lado, Paredes, Barrutia y Echebarria (2014) exploran las principales barreras existentes para la co-creación en la lógica del servicio en la investigación del comercio electrónico. Finalmente, Voorberg, Bekkers y Tummers (2014) analizan la co-creación de los ciudadanos en la innovación pública.

Aunque son varios los actores que interactúan en la prestación del servicio universitario, tanto a nivel macro (gobiernos, sindicatos, sociedad, economía, instituciones públicas y privadas) como a nivel micro (profesores, estudiantes, personal administrativo, entre otros), el presente estudio se centra en el nivel micro y, en concreto, analiza la relación entre los estudiantes y la propia institución como actores clave de la co-creación de valor en la ES. La decisión de elegir a los estudiantes como elemento central de este análisis se basa en que, en el nuevo enfoque de enseñanza-aprendizaje en la ES, los estudiantes desempeñan un papel prominente, no solo “aprendiendo” sino también interactuado con los profesores y con las instituciones.

3. Metodología

La metodología elegida para realizar la investigación se basa en una revisión de la literatura. Se ha escogido dicho procedimiento ya que ofrece una experiencia de enriquecimiento (Hart, 1998; Webster y Watson, 2002), pudiendo los investigadores acceder a valiosos recursos con el objetivo de "desarrollar una base de conocimiento" (Tranfield, Denyer y Smart, 2003, p.207). Por otro lado, permite a los investigadores resumir la evidencia que se tiene sobre un tema en particular e identificar las brechas existentes que apoyarán futuras investigaciones (Keele, 2007; Randolph, 2009).

Esta revisión se llevó a cabo siguiendo el enfoque de Newbert (2007) y Sanahuja y Ribes (2015), donde se desarrollaron siete pasos de decisión, los cuales se reflejan en la figura 1. En el primer paso, se seleccionaron las principales bases de datos internacionales para encontrar las revistas, artículos y estudios más adecuados. Las bases escogidas fueron: ISI Web of Knowledge, EBSCO y ABI / INFORM ProQuest. La segunda decisión se basó en la selección de las palabras clave. Se seleccionaron “co-creación” o “cocreación”, “coproducción” o “co-producción” (ambas terminologías

consideradas con o sin el guión) para obtener resultados según el tema analizado y disminuir posibles sesgos existentes. En tercer lugar, se definió el intervalo de tiempo. El periodo seleccionado fue de 2004 a 2016 con el objetivo de analizar las obras más recientes. La cuarta decisión se enfocó en incluir solamente los artículos publicados por revistas científicas de revisión por pares. Esta estrategia de operación arrojó el siguiente número de artículos: 595 y 1508 de ISI, 33 y 75 de EBSCO, 14 y 82 de ProQuest (donde los primeros números están relacionados con la búsqueda del término “co-creación” y el segundo con el término “co-producción”). Dado que los números eran demasiado grandes y los resultados no eran lo suficientemente precisos, se redujo la cantidad de documentos a analizar (quinto criterio de decisión) incluyendo una combinación de palabras clave secundarias: participación, educación superior, confianza, participación comunicativa, comunicación, lealtad y satisfacción. Los resultados finales fueron 79 artículos de ISI, 31 de EBSCO y 4 de ProQuest. De este modo, al leer los resúmenes, se eliminaron las redundancias (sexto paso) considerando solamente los documentos relevantes para el estudio. Finalmente se recuperaron 55 artículos de ISI, 4 de EBSCO y 4 de ProQuest. Para culminar, se realizó una búsqueda manual incluyendo otros documentos seminales pertinentes no contemplados en la lista anterior. Como resultado, se admitieron 48 artículos relevantes, aunque algunos se encontraban fuera del rango de tiempo preestablecido. Dicha decisión se tomó considerando que estos eran artículos semilla, con un alto índice de citación, los cuales, a pesar de no contener las palabras exactas exploradas, guardaban estrecha relación con el contenido investigado. Dichos artículos son en gran medida la base de los artículos encontrados en los pasos anteriormente descritos. Con el fin de rastrear y gestionar los documentos encontrados, se utilizó como gestor de referencias el software Mendeley.

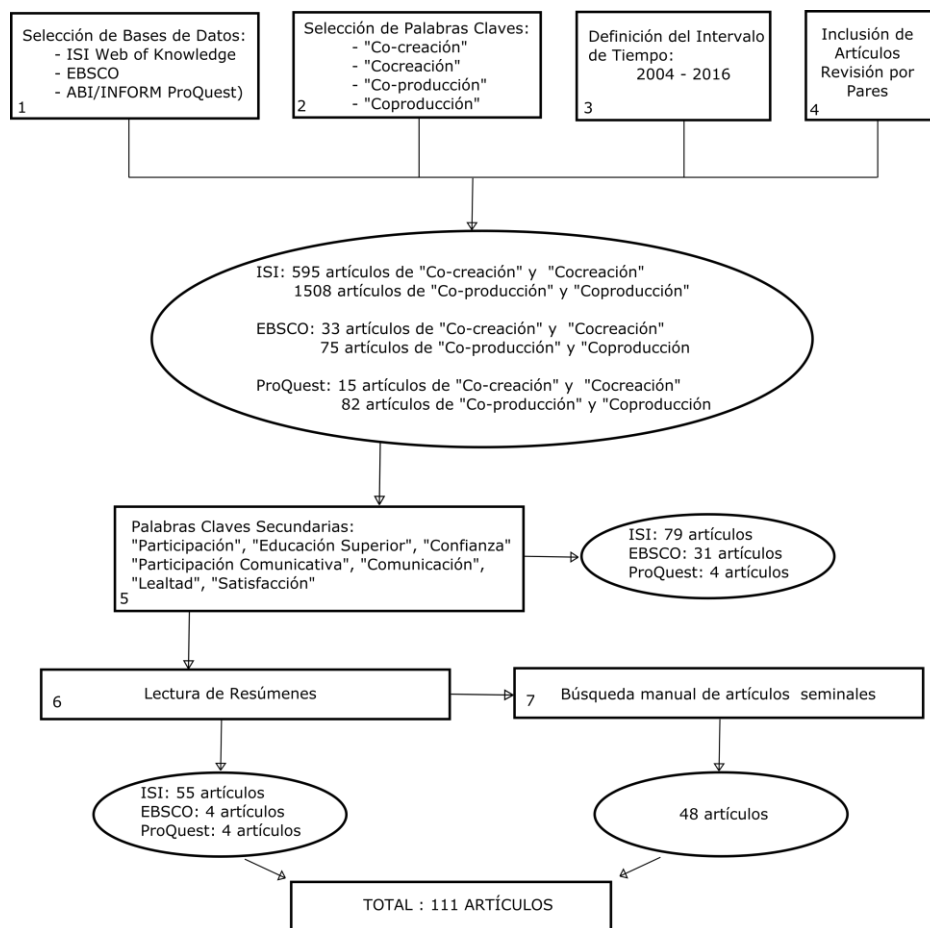


Figura 1. Pasos Desarrollados para la Selección de los Artículos

4. Resultados

Los resultados de esta revisión bibliográfica abarcan un total de 111 artículos, divididos en 63 estudios cualitativos y 48 cuantitativos. La Tabla 1 refleja un resumen de los artículos revisados, y la Tabla 2 muestra las principales revistas involucradas en el estudio. Ambas tablas se muestran como anexos al final del artículo.

Tabla 1. Resumen de los Artículos Revisados

Tópicos Generales	Estudios Cualitativos		Estudios Cuantitativos	
Co-creación / Co-producción	Bharti et al. (2015)	Payne et al. (2008)	Auh et al. (2007)	Gustafsson et al. (2012)
	Berthon, et al. (2009)	Prahalad y Ramaswamy (2004a)	Devasirvatham (2012)	Rajah et al. (2008)
	Etgar (2008)	Prahalad y Ramaswamy (2004b)	Füller, MüHlbacher, Matzler y Jaweck (2009)	Galvagno y Dalli (2014)
	Grönroos (2008)	Ramaswamy y Gouillart (2010)	Grissemann y Stokburger -Sauer (2012)	Saarijärvi, Kannan y Kuusela (2013)
	Lusch y Vargo (2006)	Rexfelt et al. (2011)		
	Mayer, Davis y Schoorman (1995)	Sanders y Stappers (2008)		
	Mulder y Stappers			

	(2009) Ordanini y Pasini (2008) Paredes et al. (2014)	Shaw et al. (2011) Terblanche (2014) Voorberg et al. (2014)		
Valor del consumidor	Kristensson, Matthing y Johansson (2008) Lundkvist y Yakhlef (2004) Muñiz y Schau (2011)	Prahalad y Ramaswamy (2013) Selnes (1998)	Bendapudi y Leone (2003) Dong, Evans y Zou (2008) Gallarza y Saura (2006) Gallarza, Saura y Moreno (2013) Ho, Hsieh y Yu (2014) Kim et al. (2004)	Lam, Shankar, Erramilli y Murthy (2004) Palmatier, Scheer, Evans y Arnold (2008) Ranaweera y Prabhu (2003) Randall, Gravier y Prybutok (2011) Rust y Zahorik (1993) Yi y Gong (2013)
Marketing en IESS / Involucramiento de los estudiantes	Barth, Godemann, Rieckmann, y Stoltenberg (2007) Bovill (2014) Dean, Arroyo- Gamez, Punjaisri y Pich (2016) Díaz- Méndez y Gummesson (2012) Enache (2011) Fagerstrøm y Ghinea (2013) Garrison y Kanuka (2004) Golooba y Ahlan (2013) Huhtelin y Nenonen (2015) Keats y Schmidt (2007) Lundström, Savolainen, y Kostiainen (2016) König (2015)	Makkar et al. (2008) Miranda, Lara, Costa y Nascimento (2016) Moerkerke (2015) Peralta-Rillo y Ribes- Giner (2013) Pinar et al. (2011) Pucciarelli y Kaplan (2016) Ribes-Giner et al. (2016) Rooij y Frank (2016) Rodina y Chekushkina (2015) Tanaka, Dam, Kobayashi, Hashimoto y Ikeda (2016) Timmis (2012) Trencher, Terada y Yarime (2015) Willis (2005) Yeo (2009)	Arnett, German y Hunt (2003) Bowden y D'Alessandro (2011) Carvalho y de Oliveira (2010) Dean, Griffin y Kulczynski (2016) Gros y López (2016) Hennig-Thurau, Langer y Hansen (2001) Junco (2012) Maringe (2006) Marzo, Pedraja y Pilar (2005)	McAlexander, Koenig y Schouten (2005) Maxwell-Stuart, Taheri, Paterson, , O'Gorman y Jackson (2016) Ribes-Giner y Peralta-Rillo (2014) Ribes-Giner y Peralta-Rillo (2015) Sauer y O'Donnell (2006) Schertzer y Schertzer (2004) Stevenson, Länsitie, Kogler y Bauer (2015) Wong (2012)
Relación con el consumidor	Baumann y Le Meunier-FitzHugh (2013) Liljander y Strandvik (1995)	Stacey (2003) Storbacka, Strandvik y Grönroos (1994)	Anderson y Narus (1990) Gerpott, Rams y Schindler (2001) Gruner y Homburg	Sirdeshmukh, Singh y Sabol (2002) Stauss y Neuhaus (1997)

	Malaviya y Spargo (2002)		(2000) Srinivasan, Anderson y Ponnavolu (2002) Garbarino y Johnson (1999)	Yang y Peterson (2004)
Innovación del Servicio	Bettencourt et al. (2013) Bolton y Saxena-lyer (2009) Bowonder et al., (2010) Greer y Lei (2012) Kohler et al. (2009)	Lee et al. (2012) Rapp (2000) Vargo y Lusch (2004) Vaisnore y Petraite (2012)	Füller et al. (2011) Helgesen (2008)	Witell et al. (2011)

Tabla 2. Principales Revistas Involucradas

Revista	No. Citaciones	SJR
Journal of Marketing for Higher Education	6	Q1, 0.84
Journal of Marketing	5	Q1, 5.95
Journal of the Academy of Marketing Science	5	Q1, 4.00
International Journal of Service Industry Management	4	Q1, 0.76
Journal of Business Research	4	Q1, 1.81
Business Horizons	3	Q1, 0.84
Journal of Retailing	3	Q1, 2.56
Journal of Service Management	3	Q1, 1.82
Tourism Management	3	Q1, 2.58
Asian Social Science	2	Q2, 0.27
Computers & Education	2	Q1, 2.61
Current Opinion in Environmental Sustainability	2	Q1, 2.32
European Business Review	2	Q1, 0.68

International Journal of Educational Management	2	Q2, 0.57
Journal of Interactive Marketing	2	Q1, 2.75
Journal of Service Research	2	Q1, 4.62
Managing Service Quality: An International Journal	2	Q1, 0.86
Telecommunications Policy	2	Q1, 0.73

5. Discusión

El primer objetivo perseguido por esta revisión de literatura es definir el concepto de co-creación de valor en el contexto de las IES, tomando como centro a los estudiantes. Para ello, se ha tratado de identificar qué aprecian o valoran los estudiantes. Aunque la definición más extendida de valor está relacionada con el dinero ("lo que se obtiene por lo que se paga"), la percepción del valor en las instituciones universitarias está vinculada con el servicio independientemente de su naturaleza monetaria, donde los estudiantes juegan un papel activo en la creación del valor universitario (Díaz-Méndez y Gummesson, 2012).

Por lo tanto, la co-creación de valor en el entorno universitario puede definirse como el proceso de conectar e introducir a los estudiantes (como consumidores del servicio) en el proceso de creación de valor. Esto implica un cambio de perspectiva en las universidades, de un enfoque de entrega de valor –hacer algo "para" los estudiantes–, a un enfoque de co-creación –hacer algo "con" los estudiantes–. Por lo tanto, este enfoque considera que las IES no sólo "proporcionan" valor a los estudiantes; sino que estos participan activamente en un proceso conjunto donde actúan como clientes, y donde juegan un papel activo a través de la interacción directa (Gustafsson, Kristensson y Witell, 2012; Kristensson, Matthing y Johansson, 2008). En este caso, los recursos vienen no solo del proveedor (Institución de ES), sino también del cliente (estudiante), lo que conlleva a una integración de los recursos en la producción del servicio (Díaz-Méndez y Gummesson, 2012).

Los factores clave considerados en el estudio de la co-creación en las IES son: la participación comunicativa, la confianza, la satisfacción y la lealtad. La participación comunicativa incluye la colaboración de apoyo entre estudiantes e instituciones con un alto grado de diálogo (Rodina y Chekushkina, 2015). La confianza se define como la certidumbre que una parte tiene en la otra, basada en la integridad y la fiabilidad (Ranaweera y Prabhu, 2003). La satisfacción se refiere a la reacción positiva "al estado de cumplimiento y al juicio del cliente del estado cumplido" (Kim, Park y Jeong, 2004,

p.148). Por otra parte, la lealtad se entiende como una actitud positiva que los clientes tienen, la cual conlleva a recomendaciones boca a boca (Kim et al., 2004).

Una vez clarificados todos los conceptos, se procede a analizar las relaciones entre los factores considerados.

Participación Comunicativa y Co-creación

En la figura 2 se muestran los artículos que apoyan la relación entre la participación comunicativa y la co-creación.

En términos generales, la co-creación se genera a través de la participación del cliente en el proceso de creación, producción y entrega de servicios y bienes, potenciando la colaboración entre empresas y clientes (Mulder y Stappers, 2009; Shaw, Bailey y Williams, 2011). De esta forma, las instituciones comprenden mejor lo que los clientes esperan de ellas (Greer y Lei, 2012), y se reducen las brechas entre las expectativas de los clientes y el producto/servicio final (Rexfelt et al., 2011).

Esta perspectiva se refuerza en las empresas que se basan en el conocimiento y en el desarrollo de las relaciones con los clientes, las cuales ofrecen servicios personalizados centrados en el consumidor. El aprendizaje y la compartición de los conocimientos se vuelven procesos vitales para reforzar la co-creación del valor donde se gana entendimiento de las experiencias y procesos de los clientes, y se logran comprender las necesidades reales de estos a través de relaciones de intercambio de conocimientos (Kohtamäki y Partanen, 2016). De esta forma, se potencia el planteamiento de que la participación comunicativa del cliente con los proveedores de servicios y su alto índice de colaboración tributan directamente al incremento de la co-creación del valor del producto o servicio ofrecido.

En el contexto de las IES, las tecnologías de la comunicación han evolucionado. Existe una tendencia a crear espacios comunicativos, la mayoría de los cuales están basados en Internet. Estas acciones fortalecen las comunicaciones y las actividades de colaboración (Timmis, 2012); y, gracias a la variedad y a la accesibilidad de los canales (Devasirvatham, 2012), se ha propiciado la evolución de la co-creación (Rajah, Marshall y Nam, 2008).



Figura 2. Participación Comunicativa vs Co-creación

Co-creación y Confianza

Se ha evidenciado con anterioridad que la práctica colectiva de la co-creación induce al crecimiento de la confianza, especialmente cuando las empresas diversifican sus canales (Prahalad y Ramaswamy, 2013). Según Ordanini y Pasini (2008), el grado de colaboración en la co-creación prefiere la prestación de servicios y el nivel de confianza en el entorno B2B. En su investigación, Baumann y Le Meunier-FitzHugh (2013) analizan la interacción entre el cliente y el personal de las organizaciones durante eventos de co-creación, y explican cómo dichos clientes desarrollan vínculos más fuertes con dicho personal que con la empresa en su totalidad. Este comportamiento se explica con base en que el staff con el cual interactúan los clientes son los mediadores que balancean los intereses de los clientes y los propósitos de la empresa (Liljander y Strandvik, 1995; Palmatier, Scheer, Evans y Arnold, 2008). Las variables que se han identificado que determinan el nivel de confianza son la habilidad, la benevolencia, la integridad y la propensión a confiar (Mayer, Davis y Schoorman, 1995). La confianza también se rige por factores como son el equilibrio del poder, la percepción del riesgo y la existencia de alternativas (Mayer et al, 1995).

En la IES, según señalan Bowden y D'Alessandro (2011), cuando los estudiantes se involucran co-produciendo de conjunto con la organización, se incrementan sus niveles de satisfacción, confianza, compromiso y lealtad hacia la universidad. Igualmente, Wong (2012) señala que dicha interacción, la cual se produce durante la co-creación del valor, incrementa los niveles de confianza del estudiante con la institución.

La figura 3 refleja un resumen de los artículos revisados.

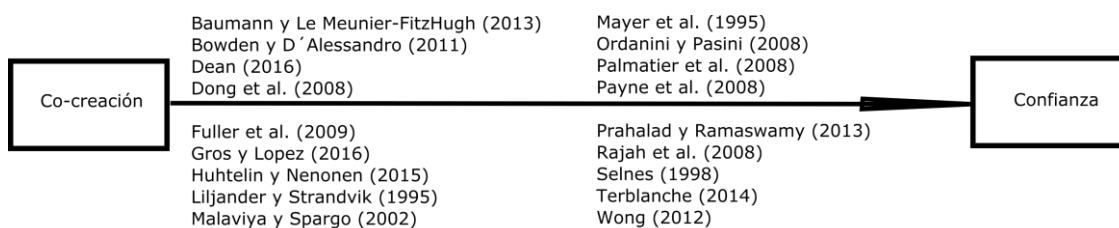


Figura 3. Co-creación vs Confianza

Co-creación y Satisfacción

Se han confirmado en varios estudios los beneficios relevantes de la co-creación, entre los cuales se encuentran la disminución de costos, mejoras en los tiempos de respuesta, así como la capacidad que posee para incrementar la satisfacción y el disfrute del cliente (Prahalad y Ramaswamy, 2013). La co-creación ha demostrado ser una estrategia válida para aumentar la satisfacción de los usuarios (Bowonder, Dambal, Kumar y Shirodkar, 2010; Grisseman y Stokburger-Sauer, 2012; Grönroos, 2008; Rajah et al., 2008). Ho, Hsieh y Yu (2014) plantean que, cuando las empresas co-crean con los usuarios, se crean límites emocionales. A través de estos lazos, las instituciones son capaces de determinar las expectativas del cliente, así como de aumentar su satisfacción.

En el contexto universitario, Maxwell-Stuart, Taheri, Paterson, O’Gorman y Jackson (2016) señalan que la co-creación se convierte en un elemento clave, ya que a través de la experiencia integradora, el estudiante desarrolla habilidades extras para alcanzar sus objetivos. Como bien comenta Krause (2007), son varias las implicaciones que se producen al involucrar a los estudiantes en los procesos de aprendizaje. Dentro de dichas implicaciones se pueden incluir la persistencia, la satisfacción y el éxito académico, lo cual se puede potenciar a través del diseño de entornos colaboradores.

La figura 4 expone los artículos principales que sostienen esta conexión.

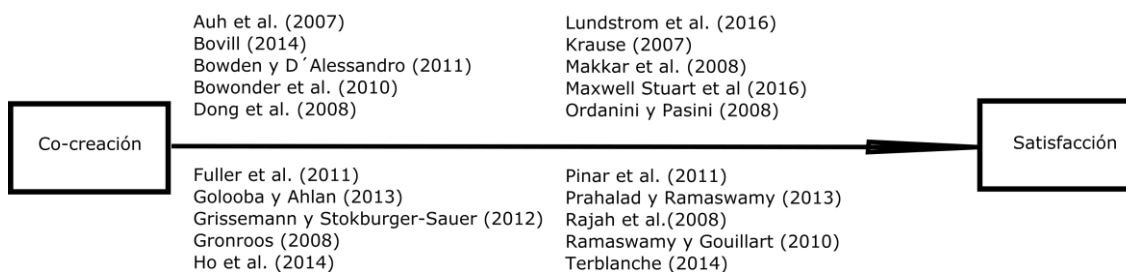


Figura 4. Co-creación vs Satisfacción

Co-creación y Lealtad

Este último factor clave (lealtad) está indirectamente relacionado con la co-creación a través de la confianza y la satisfacción. La figura 5 expone los principales hallazgos que sostienen la conexión entre confianza y lealtad.

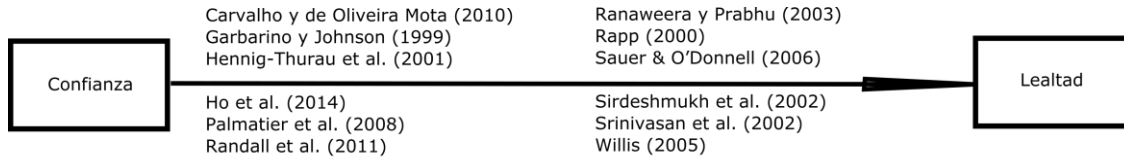


Figura 5. Confianza vs Lealtad

Al analizar la confianza, se evidencia que esta y el compromiso son precursores de la lealtad (intenciones futuras) (Randall, Gravier y Prybutok, 2011). Igualmente, la confianza tiene un fuerte impacto sobre la actitud y la lealtad del cliente, y desencadena el efecto “de boca en boca” (Ho et al., 2014).

En el contexto de las IES, hay dos dimensiones principales a considerar: la confianza en la persona y la confianza en la gestión de la institución (Carvalho y de Oliveira Mota, 2010). Ambos componentes aumentan la lealtad de los estudiantes, que se muestra como las recomendaciones dadas en el boca a boca generado por los estudiantes, y en un aumento de las intenciones de seguir estudios futuros.

En términos de satisfacción, se puede argumentar que la lealtad es el resultado de un cliente satisfecho (Baumann y Le Meunier-FitzHugh, 2013; Lam, Shankar, Erramilli y Murthy, 2004; Stauss y Neuhaus, 1997). A mayores niveles de satisfacción se reduce la rotación de los clientes a través del fortalecimiento de la retención (Kim et al., 2004). En el contexto de las IES, los alumnos que están satisfechos con los servicios universitarios son los más propensos a evaluar mejor a la institución (Arnett, German y Hunt, 2003). Por lo tanto, la satisfacción influye positivamente en la lealtad en las IES (Ribes-Giner y Peralt, 2015).

La figura 6 muestra los principales estudios relacionados con la lealtad y la satisfacción.



Figura 6. Satisfacción vs Lealtad

La co-creación está presente cuando los estudiantes participan activamente a nivel social y académico (equipos universitarios, clubes, asociaciones), de forma que los alumnos realizan acciones de recomendación, y ofrecen apoyo económico. Estas

actividades aumentan la satisfacción de los estudiantes y su lealtad (Schertzer y Schertzer, 2004, McAlexander, Koenig y Schouten, 2005).

6. Conclusiones

La presente revisión nos permite comprender mejor el concepto de co-creación, así como profundizar en las relaciones que desarrolla con factores como participación comunicativa, confianza, satisfacción y lealtad aplicados concretamente a las IES. De igual manera se confirma la existencia de vínculos fuertes a través ellos. La figura 7 proporciona una representación global de estas relaciones analizadas, lo cual permite detectar patrones y tendencias. A través de esta imagen se pueden analizar no solo el origen y destino de las relaciones, sino también se puede apreciar el volumen de estudios que las confirman y su dirección. Cada factor presenta diferentes colores: confianza en rojo, satisfacción en amarillo, lealtad en púrpura, participación comunicativa en azul y finalmente, co-creación en verde.

El ancho en el punto inicial y final de cada flujo indica el volumen de referencias. Se puede detectar también el patrón de la dirección del flujo, el cual es indicado por una brecha (holgura) entre el flujo y el segmento del círculo en el destino. Por ejemplo, en el caso de la variable co-creación, el flujo de color verde tiene una holgura mayor entre dicho flujo y el círculo, lo que significa que la co-creación tiene un impacto en las variables que reciben dicho flujo (confianza, satisfacción y lealtad). Además, en el segmento de la co-creación, el otro flujo (el azul) nos muestra que la dirección proviene de la variable participación comunicativa ya que no existe dicha brecha.

De esta forma, el gráfico permite mostrar las relaciones entre la co-creación y los diferentes factores en entornos de ES. La mayor porción del círculo está abarcada por la co-creación, y dicha porción a su vez se encuentra dividida en dos grandes flujos: el azul, que representa el volumen de artículos revisados que refuerza el impacto positivo que la participación comunicativa posee sobre la co-creación, y el flujo verde que confirma que las variables más afectadas por la co-creación son la confianza y la satisfacción. Es posible así apreciar que la curva más amplia tiene su origen en la participación comunicativa siendo su destino la co-creación, lo cual enfatiza la idea de que la fuerte vinculación entre estas dos variables es producto de una relación unidireccional. Este fuerte vínculo se ha observado en varios trabajos como Dong, Evans y Zou (2008); Lee, Olson y Trimi (2012); y Timmis (2012).

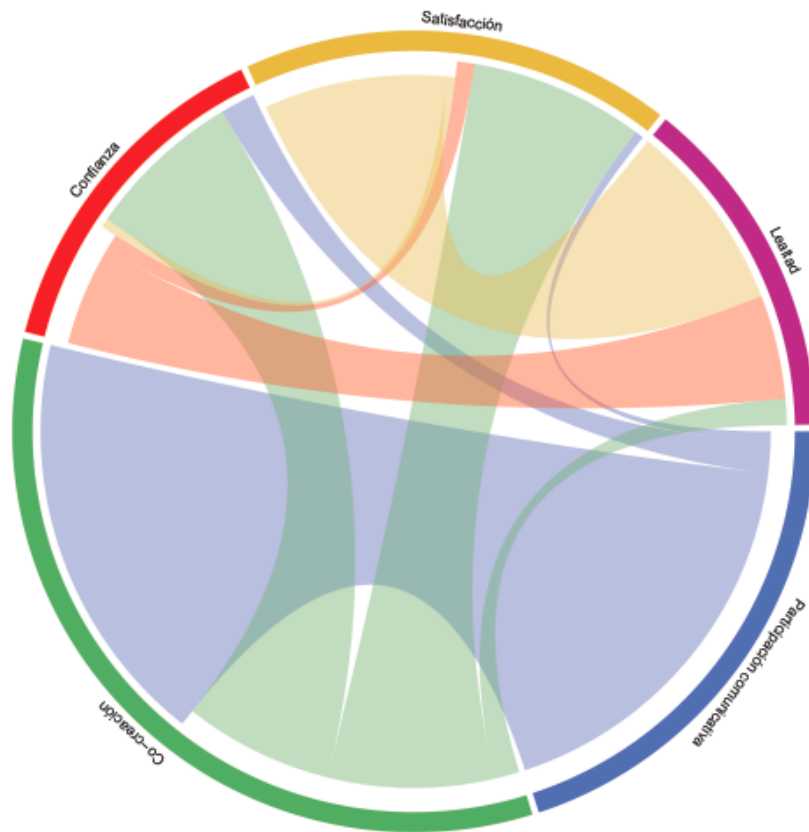


Figura 7. Mapa Circular de la Revisión Bibliográfica de la Co-creación de Valor

La confianza se muestra como el elemento con menos citas. Igualmente, al comparar los factores de satisfacción y confianza, se aprecia que la confianza tiene menor impacto sobre la lealtad. Para estudios futuros, sería útil profundizar en las conexiones directas o indirectas existentes entre la confianza y la lealtad, ya que estas no están claras aún en la bibliografía.

La presente revisión puede servir de soporte a estudios cuantitativos futuros en el contexto de las IES. A pesar de que estudios anteriores (Pantoja et al., 2016; Ribes-Giner et al. 2016) han validado cuantitativamente modelos donde se incluyen las relaciones abordadas en el presente artículo y han desarrollado sucintas revisiones de literatura, se mantienen lagunas respecto a los trabajos previos desarrollados que fomentan teóricamente dichas conexiones. Por esta razón, el principal aporte de la presente investigación es fomentar teóricamente dichos relacionamientos, evidenciando el alto impacto que tendría la co-creación en la universidad, así como sus principales generadores.

Cabe destacar que las IES constituyen un mercado educativo en el cual el producto ofrecido a la sociedad se considera un servicio, siendo los estudiantes sus usuarios principales (Díaz-Méndez y Gummesson, 2012; Enache, 2011). En el mundo co-creador de la educación superior encontramos varias partes interesadas, las cuales forman una red compleja (Díaz-Méndez y Gummesson, 2012). La presente investigación constituye

una sólida alternativa para establecer métodos innovadores que permiten mejorar la calidad, y así incrementar la fidelidad en el universo educativo.

Como destacan Carvalho y de Oliveira Mota (2010), el actual aumento de la competencia obliga a las universidades a encontrar nuevas alternativas para crear fuertes lazos de lealtad, por lo cual el propósito de todo plan estratégico educacional debe estar enfocado en aumentar los índices de lealtad de sus estudiantes. En este sentido, y considerando la necesidad de promover el acercamiento en los procesos de enseñanza-aprendizaje con los estudiantes, la co-creación de valor sigue siendo un campo interesante a ser explorado y aplicado al contexto universitario.

CHAPTER V

THE IMPACT OF CO-CREATION ON THE STUDENT SATISFACTION: ANALYSIS THROUGH STRUCTURAL EQUATION MODELING

Paper published in the Abstract and Applied Analysis Journal.

Title: The impact of co-creation on the student satisfaction: Analysis through Structural Equation Modeling.

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ABSTRACT

The objective of this study is to apply the co-creation initiative as a marketing tool in the context of university undergraduate programs. Considering that co-creation is a practice that involves stakeholders in different phases of product production or service, this research analyzes the interactions between some of the factors during the co-creation process as students collaborate with the university. These factors are participation, communication, co-creation, and satisfaction, and this study focuses on how they fuse together at the moment of co-creation. After a literature review, which supplied the basis for creating a model, we used exploratory and confirmatory factor analysis and structural equation modeling to validate the hypothesized relations between the variables; finally, the proposed co-creation model was verified. The results could empower academic institutions to develop managerial strategies in order to increase students' collaboration and satisfaction.

Keywords: Co-creation, satisfaction, structural equation modeling, higher education, marketing, participation.

1. Co-creation and the University

Higher education has been involved in recent trends such as the increasing competition in the university market, budget reductions, the internalization of education, the growth of quality standards, and clients (students) becoming more demanding and competitive in the recruitment market. Facing this situation, universities need to reevaluate their strategies and gain a marketing orientation (Kerr, 1987; Nicolescu, 2009) in order to avoid the intense competitive force (Arnett et al., 2004).

Higher-education institutions generate alternatives to increase their loyalty rates through active interaction with the student. Considering that consumer satisfaction positively affects loyalty (Carvalho & de Oliveira, 2010), a strategic goal for universities is to enhance student satisfaction.

At the current research, co-creation is conducted as a marketing alternative to increase the institutions' service satisfaction at the educational level. Co-creation assures interactions and connections among different stakeholders, generating communications and collaborative ties among them (Muñiz & Schau, 2011). This approach allows the companies to generate value through client participation, with an active role during the service process or product production (Díaz-Méndez & Gummesson, 2012) assuring a competitive advantage in the market (Bettencourt et al., 2013).

Although the university world differs considerably from the business sector, academic institutions are looking to increase their service quality and stakeholder satisfaction in order to gain a competitive advantage in the current situation (Bowden & D'Alessandro, 2011). Thus co-creation is analyzed with the objective to research the impact of students' inclusion in activities such as curriculum and program development and the teaching-learning process. The importation of co-creation to higher education institutions allows universities to adopt a marketing orientation to seek excellence and recognize quality levels.

The purpose of this investigation is to fill the existing gap in the academic market and to determine whether it is plausible to apply co-creation at higher education institutions. This viability is explored in terms of the impact of the two principal factors (participation and communication) on the co-creation process and the impact of co-creation on student satisfaction. Researching the links among those elements will permit us to confirm whether co-creation is applicable in this sector. The principal research questions are: Do communication and student participation have a positive impact under co-creation in the university context? What are the consequences of applying co-creation in higher education institutions? Does student satisfaction increase due to the co-creation experience?

Although studies by Ribes-Giner and Peralt-Rillo (2016) and Ribes-Giner et al. (2014) have researched co-creation at the university level, they have only focused on postgraduate programs. The current investigation aims to respond to the aforementioned research questions by analyzing the relationships between four principal constructs (participation, communication, co-creation, and satisfaction) in undergraduate programs as the target. Through the study of these relationships, it is possible to validate the proposed model, which has co-creation as its cornerstone. The principal qualitative tools of exploratory and confirmatory factor analysis and structural equation modeling (SEM) were used to confirm or reject the different hypotheses and to validate the proposed co-creation model. The research was developed by examining a case study of undergraduate students from 11 Ecuadorian universities.

2. Relationships between Communication, Participation, Co-creation, and Satisfaction

In this section, the theoretical basis of the proposed co-creation model will be analyzed. Four principal constructs were identified (participation, communication, co-creation, and satisfaction), which have been detailed below by comparing the conceptual relationships existing among them at the university level.

2.1. Communication vs. Participation

Communication and participation are two elements that have important impacts on co-creation when applied to the business world. Anderson and Narus (1990) commented about the positive effect of communication on cooperation between stakeholders. Communication with customers allows for positive client participation in open innovation processes (Vaisnora & Petraite, 2012), and the Internet allows broad communication with a higher user-participation rate (Lusch & Vargo, 2006).

In their research, Kohler et al. (2009) revealed that communication technologies have a positive influence on the interaction process, allowing the generation of new products. Terblanche (2014) reflected on the employer's role as an important generator in the communications process.

We find that the direct link between these two elements is maintained in the educational environment. To strengthen the relationship between university and student, it is actually a necessity to consolidate value through co-creation. Through the communication, dialogue, and participation of the involved stakeholders, it is possible to develop strategies such as knowledge co-creation in this field (Pucciarelli & Kaplan, 2016).

Authors including Garrison and Kanuka (2004) have commented on the application to universities of methodologies such as blended learning, which integrates the

traditional face-to-face system with online courses. The online learning approach, supported by the Internet and solid communication with students, guarantees quality and effective education. In this sense, the co-creation concept comes to life because the student plays an important role when he collaborates actively in the teaching-learning process.

On the other hand, student participation in formal and informal education on campus not only contributes to education quality but also positively affects the key competencies that students acquire (Barth et al., 2007). Junco (2012, p. 168) described the effect of participation in social media such as Facebook, where it has been demonstrated that students' active roles are "related to out-of-class engagement."

Regarding the relationship between communication and participation, we hypothesize:

- H1: Communication has a direct, positive impact on participation.

2.2. Participation vs. Co-Creation

At the market and university context, participation refers to the client's collaboration with the institution, which is important in order to develop a solid exchange of information to know the consumer's (students) desires and ideas and to avoid misunderstandings and ambiguous situations (Rodina & Chekushkina, 2015).

The user's involvement in different steps of the processes allows the co-production development (Auh et al., 2007), leading customers to become partial employees (Etgar, 2008). Several studies (e.g., Gustafsson et al., 2012; Gruner & Homburg, 2000; Ordanini & Pasini, 2008; Payne et al., 2008; Ramaswamy & Gouillart, 2010; Timmis, 2012; Yi & Gong, 2013) had been analyzing the interrelationship between participation and co-creation and found an interesting result that supported the link between these two constructs at several industries.

The ties existing between participation and co-creation in the university context have been addressed in some studies. For example, students' behavior is predominantly active in what is called Education 3.0, in which collaboration allows them to gain a "strong sense of ownership of own education, co-creation of resources and opportunities" (Keats & Schmidt, 2007, p. 2). In this standard the main objective is the generation of a more open and free learning system. That is why one of the conditions for developing this education level is the promotion of co-creation by creating multi-directional participation involving the affected parts.

Educational services include stakeholders such as students and professors; the students are emotionally and behaviorally involved during the service consumption, playing a dynamic role during the interaction. Some the benefits of such a

collaboration are the facilitation of learner control, enhancement of program adaptation, and learning flexibility (Bowden & D'Alessandro, 2011).

Another study, Bovill (2014) remarked on the positive impact of student participation in the curriculum design process. Across this collaboration in the co-creation activities, the teacher becomes a facilitator of learning, giving the students more responsibility at the individual and collective levels. Student collaboration and participation in different processes during the educational exchange allow satisfactory results in “both pedagogical and business outcomes” (Bowden & D'Alessandro, 2011, p. 36).

Yeo (2009, p. 72) commented that in the transformative view, students participate actively, improve their knowledge and skills, and have the “ability to think critically,” so collaboration leads to co-creation of knowledge.

Based on the findings obtained by the aforementioned author, we hypothesize:

- H2: Participation has a direct, positive impact on co-creation.

2.3. Communication vs. Co-Creation

As Muñiz and Schau (2011) commented, communication had evolved from one-way to participatory conversations, principally considering the Internet as an important channel of information flow. The positive influences that communication has under co-creation has been noted.

Communication between firms and clients (students) has an important influence in the co-creation process (Lundkvist & Yakhlef, 2004; Prahalad & Ramaswamy, 2004a) and constitutes one of the four building blocks (Dialogue) identified by Prahalad and Ramaswamy (2004b) in the DART model (Dialogue, Access, Risk, and Transparency). This model was established to consider the blocks in an accurate application of co-creation.

Social networks are a tool used to create content, as different participants can communicate and thus co-create knowledge. Applied to the educative framework, to assure an effective dialogue, “universities/colleges and the customer must become equal and joint problem solvers” to co-create value (Fagerstrøm & Ghinea, 2013, p. 50). With this perspective shift, the student goes from having a passive role to becoming a live participant who can promote his or her opinion and initiatives through communication to foster the co-creation process.

As Etgar (2008) commented, co-creation has been fomented by different communication media, such as blogs, e-distribution, and home videos; therefore, people in environments with greater access to communications instruments are better able to collaborate in co-production activities. Considering that, universities need to

create physical and virtual spaces where students can obtain information, documents, and news as well as give their feedback or news ideas, enhancing the communication channels with the institution. If communication is a mandatory condition to implement co-creation, the institution is responsible for eliminating the existing barriers to dialogue and to create a space for facilitating a proper exchange of information. Based on the research on the relationship between communication and co-creation, we hypothesize:

- H3: Communication has a direct, positive impact on co-creation.

2.4. Co-Creation vs. Satisfaction

Satisfaction refers to a positive reaction in front of a state of fulfillment (Kim et al., 2004) and as Prahalad and Ramaswamy (2013) reflected, the co-creation benefits are as follows: cost diminution, response time and sales improvement, and the induction of higher satisfaction and enjoyment. Studies by Bowden and D'Alessandro (2011), Grisseman and Stokburger-Sauer (2012) and Grönroos (2008) support the aforementioned relationship.

At higher education institutions, satisfaction it is linked with “a short term attitude which arises from the students’ evaluation of the educational experience, which is subjective in nature” (Bowden & D'Alessandro, 2011, p. 38). Some valuable impacts of satisfaction are student loyalty, cost reduction, increase in revenue, and continued education.

In the academic context, it has been proven that when curriculum is co-created with student collaboration, the satisfaction level increases for both teachers and students (Bovill, 2014). The co-creation concept empowers the university to understand what the student wants and needs, and in consequence, it is possible to deliver a superior service that directly influences student satisfaction. By tailoring its educational offers to students’ needs, an institution can provide a valuable learning experience (Bowden & D'Alessandro, 2011).

In their study, Makkar et al. (2008) reformulated Porter’s value chain by coupling it to the higher education sector. The primary services/attributes they proposed were programs, regulation recognition, moment of truth, learning spirit, and service competition; the supporting services were professional recruitment, modern tools and infrastructure, library, and after-sales service. Under this proposed change, the university and the students will be able to co-create value that satisfies both parties.

As Pinar et al. (2011, p. 728) commented, value co-creation is a learning process characterized as “emergent, unstructured, interactive, and uncertain.” For that reason, the delivery of activities are important, and faculty-student and student-student interactions are key to in the learning experience. The accomplishment of student

expectations generates satisfaction growth, but when the institution exceeds what the client/student wants, then loyalty is reached.

On the relationship between co-creation and student satisfaction, we hypothesize:

- H4: Co-creation has a direct, positive impact on satisfaction.

2.5. The Hypothesized Co-creation Model

The model to be validated is shown in Figure 1, which reflects the different relationships to be analyzed. The different ties existing between the constructs communication, participation, co-creation, and satisfaction have theoretical support from different authors, as mentioned above. The principal objective of this model is to analyze the impact of co-creation on satisfaction in the higher-education world.

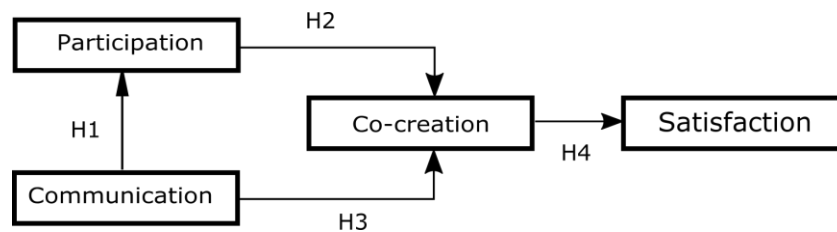


Figure 1. The Co-creation Research Model

The hypothesis to be study are four and are presented on the Table 1; they are also shown the different constructs involved in the model and the questionnaire items related to the components.

Table 1. Hypothetical Links in the Research Model, the Constructs Analyzed and the Related Questionnaire Items

Hypothesis	Construct	Items
H1: Communication has a direct, positive impact on participation.	Communication	com1, com2, com3, com4
	Participation	par1, par2, par3, par4
H2: Participation has a direct, positive impact on co-creation.	Co-creation	cocre1, cocre2, cocre3, cocre4
	Participation	par1, par2, par3, par4
H3: Communication has a direct, positive impact on co-creation.	Co-creation	cocre1, cocre2, cocre3, cocre4
	Communication	com1, com2, com3, com4
H4: Co-creation has a direct, positive impact on	Co-creation	cocre1,

satisfaction.		cocre2, cocre3, cocre4
	Satisfaction	sat1, sat2, sat3

3. Methodology, Data Collection and Technique

The technique applied during the investigation’s development to re-collect information was a structured questionnaire comprised of 31 questions; only 12 questions were analyzed in the present research related to the variables studied. A Likert scale with 7-level items, from strongly disagree (1) to strongly agree (7), was applied. The questionnaire composition proceeded from previously accomplished investigations (Chan et al., 2010; Devasirvatham, 2012; Ribes-Giner & Peralt-Rillo, 2016; Tohidinia & Haghghi, 2011; Rajah et al., 2008) and was distributed in two ways, physically and electronically, in 11 public and private Ecuadorian universities. We obtained 395 responses (92 women and 303 men) among the different versions distributed in order to prevent possible bias and to randomize the question order (Choi & Pak, 2005) . The questionnaire was applied only in undergraduate programs, including students in their fourth through tenth semesters, considering those scholars have a solid perception about the university’s services.

3.1. Measures

Our measurements were adapted from existing scales developed in other studies in order to measure the four constructs (communication, participation, co-creation and satisfaction). Participation was adapted from a validated questionnaire created by Chan et al. (2010) measuring the degree of the information students shared with the university and how much they were involved in the institution’s process. Communication was extracted from Harrigan and Miles (2014) and Tohidinia and Haghghi (2011) investigations, analyzing the exchange of information among the parties involved. Co-creation’s construct checked how the students were involved in the different academic and administrative processes, and it was measured by four items adapted from Devasirvatham (2012), Rajah et al. (2008) and Ribes-Giner and Peralt-Rillo (2016). Satisfaction is comprised of items extracted from Devasirvatham (2012) and Rajah et al. (2008) and studied the contentment that the user has with the institution. Since all questions were originally in English, they were translated to Spanish for this study.

4. Empirical Results: Multivariate Analysis

To analyze the results, we applied a confirmatory factor analysis to explore the associations between items and constructs, and lastly, SEM to investigate the causal relationships existing between constructs.

4.1. Exploratory Factor Analysis

EFA was applied in order to check whether the principal components detected by this technique were similar to the components identified by the authors, recognizing that items that are pooled jointly measure the same factor (Dobni, 2008; Gorsuch, 1997). Every variable was included, taking into account the theoretical basis and allowing the EFA to corroborate whether those statements were correct. EFA granted the validity of each construct through the principal-components method (Hinkin, 1998). It used the SPSS v19 program, and the results showed that there are four principal components, as established in the proposed model (participation, communication, co-creation, and satisfaction).

A Varimax rotation and the maximum likelihood extraction method were used with the four fixed components. Table 2 reflects the results of the first and second iteration. In the first iteration, problems with four items were detected (par3 - I have a high level of participation in the service process, com1 - The information provided by the university can be trusted, com2 - In case of any problem, the university provides me with enough information, and sat3 - I think I did the right thing when I enrolled in this university). The items par3, com1, and com 2 had loading differences under 0.1 with several constructs. The item sat3 had a loading difference above 0.1, but its highest loading values do not correspond with the construct relative to satisfaction. For that reason, those four items were dropped; the rest of them (11 items) remained in the analysis.

Table 2. Exploratory Factor Analysis Results

	EFA First Iteration				EFA Second Iteration			
	Components				Components			
	1	2	3	4	1	2	3	4
par1			0.552				0.521	
par2			0.714				0.615	
par3			0.504	0.485				
par4			0.660				0.766	
com1	0.406	0.236						
com2		0.179		0.489				
com3		0.502				0.582		
com4		0.501				0.563		
cocre1	0.707				0.710			
cocre2	0.766				0.786			
cocre3	0.616				0.608			
cocre4	0.647				0.654			
sat1				0.679				0.667
sat2				0.792				0.746
sat3	0.448			0.457				
Cronbach's Alpha	0.890	0.781	0.783	0.822	0.890	0.766	0.743	0.835

Cronbach's Alpha (General)	0.926	0.906
KMO	0.936	0.910
Barlett Test	$\chi^2 = 3889.291$, gl = 105 p=.000	$\chi^2 = 2466.155$, gl = 55 p=.000
Variance Explained	59.34	64.40

Cronbach's alpha (Cronbach, 1951) is an indicator that reflects the homogeneity in the instrument's consistency; the second and last iteration had an excellent value of 0.906 (above 0.7). The explained variance of the four principal components is about 64.4%. The KMO value is 0.910, higher than 0.5 (Kaiser, 1974), and the Bartlett test returned $p = 0.000$. The differences in these indicators between the first and the second EFA are minimal, and despite the diminished Cronbach's alpha (from 0.926 to 0.906) and decreased KMO (from 0.936 to 0.9910), both indicators had excellent values.

4.2. Confirmatory Factor Analysis

It was carried out a CFA with the remaining items. In this step the SPSS Analysis of Moment Structures (AMOS) program was used, allowing us to assess the overall measurement model.

It was used a convergent and discriminant analysis to evaluate the model's validity. The convergent validity was studied through the CR, AVE, and the factor loading of each item. Table 3 shows AVE values for the four constructs, and all of them had values above 0.5, proving that the variance captured by the constructs is larger than the variance due to measurement errors, as stated by Fornell and Larcker (1981). The CR, as O'Leary-Kelly and Vokurka (1998) mentioned, brings a proportion of variance attributable to only the latent variable with a recommended value greater than 0.7, putting the four constructs' CR values above the upper bound and confirming the model's reliability. Also, all the factor loadings are higher than 0.5, and the estimated coefficients of each item are all significant (t -value > 2.0) (Auh et al., 2007; Anderson & Gerbing, 1988).

In looking for the discriminant validity, we noticed that the square roots of the AVEs had higher values than the correlations among the constructs. For example, co-creation and satisfaction have AVE values of 0.676 and 0.723, the square roots of AVE are 0.822 and 0.850, respectively, and both values are higher than the correlation between co-creation and satisfaction (0.806). The same occurred for the other constructs' relationships, assuring the discriminant validity. These analyzes are shown in Tables 3 and 4.

Table 3. Confirmatory Factor Analysis, CR and AVE

Constructs	Factor loadings	t-values
<i>Participation (CR = 0.764, AVE = 0.519, Squared Root of AVE = 0.720)</i>		
par1 I put a lot of effort into expressing my personal needs to the staff during the service process. (a)	0.753	-
par2 I always provide suggestions to the staff for improving the service outcome.	0.696	10.784
par3 I have a high level of participation in the service process. (b)	-	-
par4 I am very much involved in deciding how the services should be provided.	0.711	10.157
<i>Communication (CR = 0.781, AVE = 0.642, Squared Root of AVE = 0.801)</i>		
com1 The information provided by the university can be trusted. (b)	-	-
com2 In case of any problem, the university provides me with enough information. (b)	-	-
com3 The university allows me to have an interactive communication with it. (a)	0.844	-
com4 The university maintains a regular contact with me.	0.756	14.735
<i>Co-creation (CR = 0.892, AVE = 0.676, Squared Root of AVE = 0.822)</i>		
cocre1 Overall, I would describe my relationship with this, university as involving a high level of co-creation.	0.866	24.495
cocre2 The final purchase solution was arrived at mainly through the joint effort the university and myself. (a)	0.901	-
cocre3 What I receive from this university is due to work jointly between, the university and student.	0.790	19.829
cocre4 I contribute actively to the final solution in the educational service I receive.	0.721	17.235
<i>Satisfaction (CR = 0.839, AVE = 0.723, Squared Root of AVE = 0.850)</i>		
sat1 Overall, I am pleased with the services offered by this university.	0.904	17.844
sat2 The service offered by my university meets my expectations. (a)	0.793	-
sat3 I think I did the right thing when I enrolled in this university. (b)	-	-

Notes. CR: composite reliability, AVE: average variance extracted.

(a) Initial loading is fixed to 1 to set the scale of the construct.

(b) Deleted after AFE.

Table 4. Means, Correlations (above diagonal) and Covariances (below diagonal) among Construct

	Mean	Participation	Communication	Co-creation	Satisfaction
Participation	4.63	1	0.680	0.630	0.568
Communication	4.86	0.789	1	0.743	0.770
Co-creation	5.39	0.751	0.945	1	0.806
Satisfaction	5.27	0.633	0.916	0.984	1

4.3. The Structural Model

The SEM approach was used in order to validate the proposed model and to confirm the relationship between the proposed construct, with the application of the SPSS AMOS software. SEM is widely used to build and validate theories (Chin, 1998; Haenlein & Kaplan, 2004). The SPSS AMOS module was used, since it was primarily created for SEM analysis.

In order to obtain a better model fit, the item errors from par1 and par2 were correlated. Figure 2 shows the results of the SEM model and the Table 5 shows the model fit indices and the structural model estimates.

Table 5. Structural model results. Estimates and model fit

	Hypothesis	Standardized coefficients (β, γ)	S.E	p-value
<i>Direct effects</i>				
Communication \rightarrow Participation (γ_1)	H1	0.677	0.067	< 0.001
Participation \rightarrow Co-creation (β^1)	H2	0.219	0.080	0.003
Communication \rightarrow Co-creation (γ_2)	H3	0.625	0.080	< 0.001
Co-creation \rightarrow Satisfaction (β_2)	H4	0.826	0.053	< 0.001
<i>Model fit indices</i>				
CMIN/DF		3.346	<~ 3	
CFI		0.962	> 0.95	
GFI		0.943	~> 0.95	
AGFI		0.903	> 0.8	
RMR		0.076	< 0.09	
RMSEA		0.077	< 0.08	

The proposed model fit the data well. The comparative fit index (CFI) had an excellent value (0.962, over 0.95), and the adjusted goodness-of-fit index (AGFI) also had a good value (0.903 > 0.8). The root mean square residual (RMR) was 0.076, under 0.09; the normative fit index (NFI) was 0.948, and the root mean square error of approximation (RMSEA) = 0.077 (less than 0.08) (Hancock & Freeman, 2001).

The SMC of co-creation showed that 62% (SMC = 0.623) of this element is explained by the direct effect of participation and the direct and indirect effects of communication, with a high value. Half of the variance of participation (46%; 0.459) was explained by the direct impact of communication; more than half of satisfaction's variance (68%, 0.682) was explained by the direct effect of co-creation.

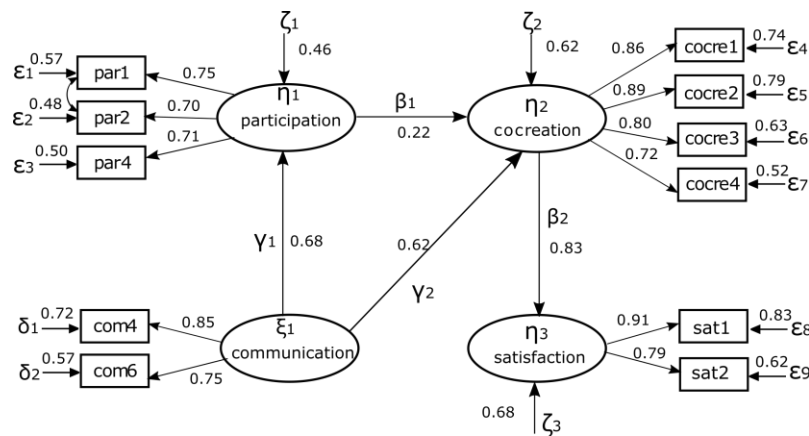


Figure 2. SEM Model

The four relationship studies have significant and positive impacts such as communication under co-creation with a value of $\gamma = 0.62$ ($p < 0.001$), as many authors had highlighted (Auh et al., 2007; Gustafsson et al., 2012; Gruner & Homburg, 2000). Communication had a high impact on participation ($\gamma = 0.68$, p -value < 0.001) (Anderson & Gerbing, 1988; Lusch & Vargo, 2006; Vaisnore & Petraite, 2012), and participation also had a positive effect on co-creation, though with a lesser impact ($\beta = 0.22$, p -value = 0.003), supporting the relationship established by authors like Etgar (2008), Muñiz and Schau (2011) and Ramaswamy (2008). Co-creation had the highest impact on satisfaction ($\beta = 0.83$, p -value < 0.001), as authors like Bowonder et al. (2010) and Ramaswamy and Gouillart (2010) had remarked.

We researched mediation by participation in Hypothesis H3, studying the relationship between communication and co-creation. Authors like Little et al. (2007) and Baron and Kenny (1986) had pointed to the importance of the mediation analysis. Table 6 and Figure 3 reflect the resulting analysis, where a poor but significant partial mediation existed by participation between communication and co-creation.

Table 6. Participation mediation between Communication and Co-creation

Hypothesis	Direct effect w/o mediator (1 st situation)	Direct w mediator (2 nd sit.)	Indirect effect (3 th sit.)	Mediation type observed
Partial mediation Communication- Participation - Co-creation	0.631 (**)	0.625 (**)	0.148 (*)	Partial mediation

*p-value < 0.05, **p-value < 0.01

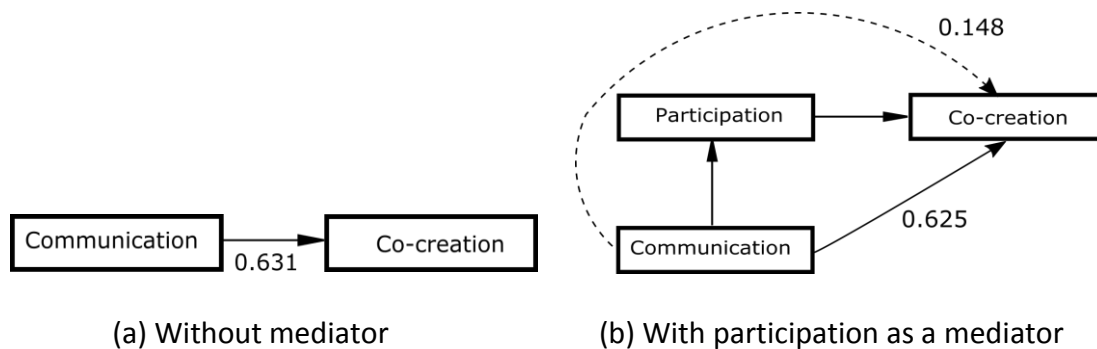


Figure 3. Direct effect of communication in co-creation

The obtained results allowed us to conclude that the four hypotheses raised in the initial phase of the research are accepted. Communication had a positive and significant impact on participation (0.68), and participation had a positive and significant influence on co-creation (0.22). Communication also significantly and positively affected co-creation (0.62), and co-creation in turn affected satisfaction (0.83), with the highest regression coefficient indicating that this relationship was the strongest of all analyzed.

5. Conclusions and Contributions

Taking into account the principal objective of the research, the positive relationships existing between communication and participation, participation and co-creation, communication and co-creation, and lastly co-creation and satisfaction in the undergraduate context were verified. The research also validated a co-creation model, considering that participation and communication were the most important promoters of co-creation; co-creation also had a high impact on student satisfaction. This model assured the importance of a change to a management practice focused on co-creation, as was the original intent.

To face the reality of student satisfaction, higher-education institutions are looking for innovative ways to improve their administration. Considering that co-creation had

been studied previously by many authors with favorable effects in terms of satisfaction, trust, and loyalty, it is a pragmatic tool to be considered and implemented in the university context. It will be important to notice that the lowest detected interaction was between participation and co-creation. Based on this, undergraduate students mostly valued communication as a co-creation precursor. At this point, universities need to develop open dialogues and bi-directional conversations with students to enhance open talks and forums and to improve the communication channels based on information or virtual systems, Internet, or other portals where the scholar can interact with the school.

Despite satisfaction as a valuable factor in terms of competitive advantage, its existence is essential to obtain high loyalty levels. That is why it would be interesting and innovative to investigate loyalty inclusion as a new construct within the co-creation model aforementioned in further studies. Despite these relationships having been analyzed previously in postgraduate programs, they had never been researched in undergraduate programs.

It will be useful and timely to deepen our understanding of how we must change the institution's process or how to move from the actual vision of rigid value chains to newer ones, with the objective of materializing and concretely practicing the co-creation approach. The benefits of strategic management oriented to this trend have been tested, but the implementation and the actions to be undertaken are a poorly explored field.

It is important to foment and explore methodologies for applying strategies such as co-creation in the university context in order to increase the level of retention, word of mouth, and student loyalty.

CHAPTER VI

CO-CREATION IMPACTS IN STUDENT LOYALTY

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Title: Co-creation impacts in student loyalty.

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ABSTRACT

In the present study the impact of co-creation on student's behavior in higher institution context is analyzed . Following Service-dominant logic in co-creation, we aim to study this approach at the university environment, in order to reinforce strategic management solutions. In so doing, co-creation impacts in trust and student loyalty has been analyzed from a service dominant logic perspective. Considering students as an important stakeholder in the academic development, a co-creation model focused on them has been defined. After confirming the relationship between the construct identified (co-creation, trust and loyalty) reviewing previous literature, the model has been validated with the application of statistical techniques (exploratory factor analysis, confirmatory factor analysis and structural equation modelling). The results obtained remarks that co-creation has a higher positive impact on trust than loyalty, having also trust a positive effect on loyalty. Those findings remark the effectiveness that co-creation has at the university world.

Keywords: Co-creation, trust, loyalty, students, higher education.

1. Introduction

The latest marketing trends focuses on service co-creation with the active participation of the customers, where customers are involved in stronger communication processes (Muñiz & Schau, 2011). As a consequence of this approach, service-dominant logic (S-D L) have increasingly acquired greater relevance. Following S-D L principles, it could be said that in service industry, the customers is always a cocreator of value (Vargo & Lusch, 2008). This tendency has become an innovative approach that concedes knowledge to companies about what customers consider valuable (Bettencourt et al., 2013). Even though it is difficult to establish, such knowledge permits the institution to gain a competitive advantage for leading the market.

Moving on HE marketing trends, it is shown that it has to gain a sound understanding of the choice decision process and develop the right strategies. All of this with a view to ensure both students' decision to enrol on the programs HE institutions offer, and their satisfaction with such a decision when the service is received (Kotler & Fox, 1995). In this increasingly competitive situation, the need for strategies that will provide a leading edge in the sector is evident (Ribes-Giner & Peralt-Rillo, 2016; Ribes-Giner et al., 2014).

Building on Ribes-Giner and Peralt-Rillo (2015) work, this paper aims to analyze the impact on university student behavior of value co-creation, in undergraduate context. In so doing, the study is focused in the impact of value co-creation on student's loyalty and trust; in order to give clues for manager in applying innovative management practices at higher institutions.

A conceptual model is proposed including three variables (co-creation, trust and loyalty). This model is supported by a previous literature review that confirmed the theoretical relationship among these construct. It si through an EFA, CFA and SEM, that the co-creation proposed model, reflecting the positive effect that co-creation has in the student conduct, is validated.

This paper is organized as follows. In section 2, the theoretial concepts of the variables: co-creation, trust and loyalty at the higher education environment are detailed, where are raised the principal hypotheses of the study and the proposed model. In section 3, the applied methodology is presented and section 4 the principal results and analysis of the study is shown. Discussion of the findings and the conclusions are reported in the section 5.

2. Background, Hypothesis and Co-creation Model

In developing the conceptual model (see Figure 1), a range of literature is reviewed on marketing concepts that are relevant to this research focus, such as co-creation, trust,

and loyalty. On the basis of this review, the key constructs of our model are defined. At the same time, the theoretical bases and existing evidence supporting the relationships shown in the model are described.

2.1. Co-creation in Higher Education Institutions

Prior to the introduction of the term value co-creation other terms have been used. For instance, the term “open innovation” has been used to characterize a system in which innovation is not solely performed internally within a firm, but in a cooperative mode with other external actors (Chesbrough, 2006; Fredberg, Elmquist & Ollila, 2008). This term evolved, and Piller and Vossen (2011) introduced the term “customer co-creation” to define strategies of open innovation with customers. Prahalad and Ramaswamy (2004b), detailed the concept arguing that co-creation concept represents a unique way of creating value for customers. Furthermore, Vargo and Lusch (2008) define this co-creation concept as the way in which companies deal with their customers through customer participation in the joint creation of service value. In this respect, Hasche (2006) concludes that the focus has shifted from the activities performed by the firm to activities co-created in a relationship with other partners and stakeholders. In the same vein, Gustafson et al. (2012) argue that co-creation involves different forms of communication and interaction with consumers and their environment during the value creation process. Thus, it could be said that the purpose of co-creation is to connect and immerse consumers as the first phases of idea generation (Galvagno & Dalli, 2014; Gustafsson et al., 2012; Kristensson et al., 2008; Payne et al., 2008; Prahalad & Ramaswamy, 2004b; Sanders & Stappers, 2008; Saarijärvi et al., 2013). With this approach, the customer plays a decisive role as they start to be connected, informed and to be active with regard to firms (Prahalad & Ramaswamy, 2004b).

Since in HE institutions service is the fundamental basis of exchange, S-D L is used in this study, following Vargo and Lusch (2008) guidelines. The core concept of S-D L is that the customer is always a co-creator of value with the firm through involvement in the entire service value chain (Vargo & Lusch, 2006; Yi & Gong, 2013). This implies developing a dialog between parties that is founded on trust, learning together, and adapting to each other. Therefore, due to the fact that HE itself is a service to students, who become customers, it is possible to investigate the implications of the emerging dominant logic on the delivery of marketing courses and the student experience (Baron & Harris, 2006). Thus, the adoption of the S-D logic at HE seeks to transform the traditional teaching – learning process, fostering students collaboration and participation (Tuzovic & Finsterwalder, 2009).

In the following subsections relationships between value co-creation and trust and loyalty are theoretically substantiated to suggest a model for later validation. This model is intended to respond to a number of issues raised by Rajah et al. (2008), who

stress the need for empirical studies that demonstrate the impact and consequences of the implementation of co-creation in different sectors from a marketing perspective. The interrelationships between these constructs are incorporated within the model for testing in a HE institution setting. In particular, we examine the mediating role of trust regarding the impact of value co-creation on loyalty, and also the direct impact of co-creation on loyalty.

2.2. Co-creation and Trust

Trust contains “interrelated emotional and cognitive elements as well as cultural meanings, beliefs and social interactions” (Baumann & Le Meunier-FitzHugh, 2013, p. 8). Other authors, such as Sirdeshmukh et al. (2002, p. 17), state that trust is based on the customers’ expectations where “the service provider is reliable and can be relied on to deliver on its promises.”

Some services are needed to develop higher level of trust than others, such as financial or insurance services, where it is a premise that customers feel completely confident about firms and the way transactions are made and service is provided (Liljander & Strandvik, 1995).

At the HE context, trust has been studied in order to diminish unfavorable situations such as retention issues. Trust in HE context is a combination of student perception of HE institution’s expertise, congeniality, openness, sincerity, integrity, cooperation, timeliness, and tactfulness (Ghosh, Whipple & Bryan, 2001; Carvalho & de Oliveira, 2010). The increase of students’ trust allow the institutions to enhance their quality perception thanks to word of mouth endorsements from students. Additionally, trust could reduce price sensitivity and thereby enable an increase in tuition fees (Ghosh et al., 2001). Alumni with a high confidence in their alma mater maintain their links with it, and they contribute not only economically, but also recommending the institution to other persons.

In reviewing literature, several authors stress the positive and direct relationship existing between the co-creation and trust (Dong et al., 2008; Palmatier et al., 2008; Payne et al., 2008; Prahalad & Ramaswamy, 2013; Terblanche, 2014). Thus, our initial hypothesis is as follows:

- H1: Co-creation influences positively on trust.

2.3. Trust and loyalty

Loyalty is known as a source of competitive advantage, which has been analyzed in the strategic management area (Lam et al., 2004). Loyalty causes a repurchase intention triggering word-of-mouth recommendations (Kim et al., 2004). Some loyalty

approaches have been studied, such as behavioral loyalty, attitudinal loyalty and the integration of both.

Ho et al. (2014), Randall et al. (2011) and Rapp (2000) through their pieces of research confirm the existing link between the trust and the loyalty, and Rajah et al. (2008) also highlight that trust is a mediator between the co-creation and the loyalty.

Moving on Higher Education context, it could be said that student loyalty enhances financial institutions stability, creates solid ties to alumni (Carvalho & de Oliveira, 2010) and increases student retention until graduation (Rojas-Méndez, Vasquez-Parraga, Kara & Cerda-Urrutia, 2009). Several studies have been published in this context. For instance, Hennig-Thurau et al. (2001) proposes a loyalty model at the university context. In their model loyalty is determined by three components (service quality, trust and commitment to the institution). Having studied the impact of trust in loyalty on a sample of students from different schools, they concluded that this impact is only strong and significant in the case of education students; not been representative in the others specialties engaged. On the other hand, Sousa, Oliveira and Rezende (2006) analyzes the relationship between trust and loyalty in long distance education. They conclude that trust assures the existence of a long-lasting relationship between institutions and students, resulting loyalty intention. Espartel, Sampaio and Perin (2008) also validated a model at the HE context, with the aim of analyze the relationship between trust, value and loyalty. As a result, they confirmed that trust is a generator of loyalty, and also reflected that the relationship is greater with students more involved with the courses; presenting higher trust levels with the staff and institution, been more loyalty.

Therefore, since in the education market several studies stress the positive relationship between trust and the loyalty of the student like Carvalho and de Oliveira (2010), Espartel et al. (2008), Hennig-Thurau et al. (2001) and Sousa et al. (2006), our second hypothesis is as follows:

- H2: Trust has a direct, positive effect on loyalty.

2.4. Co-Creation and Loyalty

Ribes-Giner and Peralt-Rillo (2014) had demonstrated, at the undergraduate context, that co-creation influence positively the student loyalty. On the other hand, Grisseemann and Stokburger-Sauer (2012) also analyzed this relationship in a service company, concluding that co-creation affects the customer loyalty.

Therefore, our third hypothesis is as follows:

- H3: Co-creation influences positively on loyalty

2.5. Hypothesized Model

Through the previous subsections, the theoretical connections between co-creation and trust and loyalty have been identified, as illustrated in Figure 1. The relationship between all these constructs are incorporated in the model tested in a HE setting. In particular, the mediating role of trust in the impact of value co-creation on loyalty is examined.

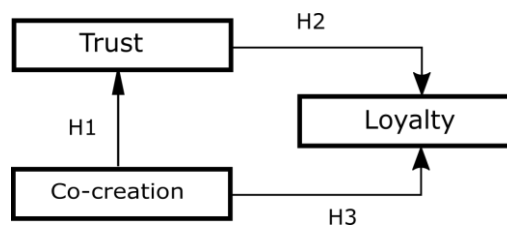


Figure 1. The Co-creation Conceptual Model

3. Methodology and Methods

In this section the applied methodology, the sample characteristics, the instrument used and the principal statistical methods utilized to analyze the results are described.

3.1. Data Collection

It was applied a questionnaire composed by 12 structured questions extracted from a previous research (Rajah et al., 2008). There were four questions about co-creation, three questions about trust and three questions about loyalty. Those questions were structured through the Likert scale with 7-level items, from strongly disagree (1) to strongly agree (7). The targeted sample comprised undergraduate students from Ecuadorian universities of engineering schools, considering only the students enrolled from the third to the tenth semester, in order to obtain information from those with more experience with the university services. The survey was spread online to 395 students.

3.2. Applied Methods

Information collected from the survey was analyzed by quantitative methodology. The first statistical tool used was de EFA with the objective to validate the instrument. The program utilized was the SPSS program, and the extraction method applied was the Maximum Likelihood extraction with Varimax Rotation. It was fixed 3 components (co-creation, loyalty and trust) and there was not detected any conflicting items.

The second phase was the analysis of the CFA ejected with the SPSS AMOS program, in order to explore the relations between the constructs and the items. The third and last one analysis applied was the SEM.

4. Results and Analysis

The results for the EFA reflected good findings. The Cronbach's alpha obtained was 0.925, having a recommend value over 0.7; the explained variance was 66.56% and the KMO value was 0.927 (over 0.5), and the Bartlett test gave $p=.000$.

The results obtained at the CFA show an AVE above 0.5, the composite reliability of the constructs are higher than 0.7, and the factor loadings for co-creation, trust and loyalty were higher than 0.5. Studying the square roots of the AVEs, was confirmed the discriminant validity, because all the constructs had values higher than the inter-construct correlations.

The SEM analysis showed that all the indicators analyzed presented good value, confirming a good model fit. The CFI was 0.992 (> 0.95), the AGFI was 0.955 (> 0.8), the RMR was 0.041 (< 0.09), the normative fit index (NFI) was 0.980 (> 0.95) and the RMSEA was 0.042 (< 0.08). The squared multiple correlation of loyalty showed that 63.1% of this element is explained by the direct effect of trust and the direct and indirect effects of co-creation; and the 66.4% of the trust variance it is explained by co-creation. In the Figure 2 it is shown the resulting model.

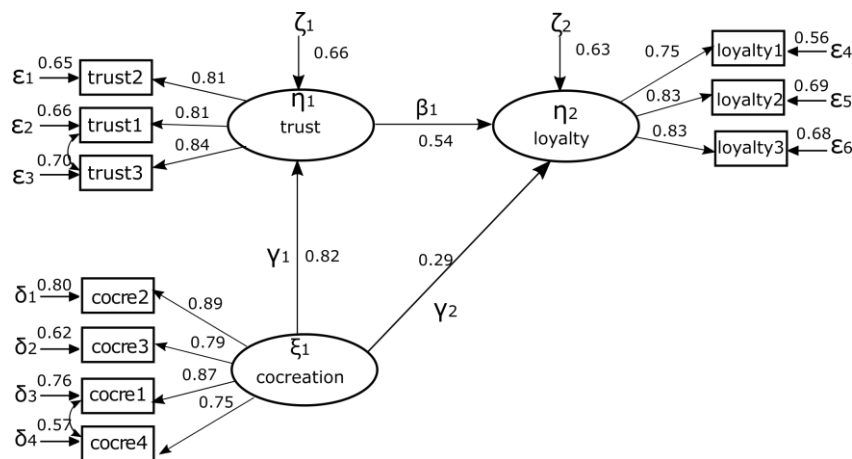


Figure 2. The SEM Model

Analyzing the mediation by trust in the relationship between co-creation and loyalty, it was detected that exists a partial and significant mediation.

5. Discussion and Conclusions

As conclusions it is possible to assure that the three relationship studied has a positive and significant impacts, confirming the hypothesis above arise:

- Co-creation has a positive and significant impact above trust ($\gamma = 0.82$, p -value < 0.001).
- Trust has a positive and significant effect on loyalty ($\beta = 0.54$, p -value < 0.001).

- Co-creation has a significant and the lesser on loyalty ($\beta=0.29$, p-value = 0.001).

The highest tie is represented by the relationship between co-creation and trust, confirming the findings of previous studies (Carvalho & de Oliveira, 2010; Dong et al., 2008; Ghosh et al., 2001; Palmatier et al., 2008; Payne et al., 2008; Prahalad & Ramaswamy, 2013; Terblanche, 2014). Trust remain at the undergraduated context as a precursor of loyalty with a high impact, and despite co-creation has a low influence in loyalty, it remains been positive and significant.

With this research, the positive outcomes of co-creation at the university context with a S-D logic in undergraduated students are confirmed, producing co-creation an increase in student trust and loyalty. A managerial implication of this results is related with the fact that universities need to adopt a co-creation approach as a key strategic vision in order to increase the student loyalty.

It is important to highlight that it will be useful, in future studies, to research the relationships analyzed in the present study in other schools, with the aim of detecting possible patterns per specialty area. Also, it could be interesting to compare difference in perceptions considering gender with the objective to detect significant differences between males and females face a co-creator environment.

CHAPTER VII

CO-CREATION AT HIGHER EDUCATION INSTITUTIONS

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Title: Co-creation at Higher Education Institutions.

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ABSTRACT

The present research focuses in the application of Co-creation at higher education institutions, with the objective to apply management tools at the university context. Taking into account that co-creation is born when the stakeholders have an active participation from the initial phase of idea generation to the delivery process, we have been focused in the university environment, considering the student as a value generator at the academic field. In this sense, there were identified and studied several variables that interact during the Co-creation events, such as participation, communication, trust and satisfaction, and the relationship existing among them were identified. The statistical tools applied are mainly the Exploratory Factor Analysis, Confirmatory Factor Analysis and the Structural Equation Modelling, in order to validate the proposed model which includes the variables mentioned previously and their interaction with co-creation. The application of co-creation at HEI brings to the university a new way to manage their students, with positive results that evidence the increasing rates in trust and students satisfaction.

Keywords: Co-creation, trust, satisfaction, participation, higher education.

1. Introduction

The application of the co-creation methodology to the university scope is quite an unexplored field. Some studies have dabbled in the application of this strategy in postgraduate programs, and have also studied the different tools used in this field (Ribes-Giner & Peralt-Rillo, 2014, 2016).

Nowadays, the university is facing an increasing higher market offering, where the competition among the institutions is strong. Due to the crisis that is affecting all the branches of the economy, the public institutions suffer budget reductions. On the other hand, the students are increasingly becoming informed and with greater mobility capacities, fostering the internationalization of education.

Taking into account the growth of quality standards at the education market, and clients that are more exquisite and exigent, the higher education institutions are forced to adopt strategical decision to face the actual situation.

It is a real necessity to re-evaluate the universities mission and their strategies, to survive and gain competitive advantage in front the competence.

At this sense, it is appropriate to evaluate the possibility to apply a Co-creation approach at the university context, to improve the academic management, centring the attention at the student participation and collaboration.

2. The Proposed Model

The conceptual model proposed at the present research is shown in the Figure 1. This model contains four main variables: participation, co-creation, satisfaction and trust.

The participation is focused on the personal interaction between the clients and the employees (Yi & Gong, 2013), where the customer is actively engaged in a co-production process (Auh et al., 2007). Another vision considers the customer as a partial employee of the service providers (Etgar, 2008).

Co-creation has gained importance in the business world, linking together clients and consumers at the very first stage of the idea conception for products and services creation. Innovative firms develop channels to establish links with all involved stakeholders, where the service success is conditioned to how each participant performs its corresponding functions (Bettencourt et al., 2013; Muñiz & Schau, 2011; Ramaswamy & Gouillart, 2010).

Satisfaction includes the way in which the students feel about the educational and the academic service they are receiving. Satisfaction benefits are numerous, such as increasing customer loyalty, diminishing customer churn and limiting price sensibility. The importance of customer satisfaction is linked to the efforts to enhance loyalty and

customer retention and therefore, contributes to increase the firms' revenues (Stauss & Neuhaus, 1997).

Trust refers to the confidence that one part has in the other one in an exchange process, considering the reliability and integrity in a satisfactory service provision (Randall et al., 2011). Trust is "a multidimensional psychological state containing interrelated emotional and cognitive elements as well as cultural meanings, beliefs and social interactions" (Baumann & Le Meunier-FitzHugh, 2014, p. 3).

Based in those definitions, the followings hypothesis were conformed to be validated:

- H1: Participation has a positive impact on co-creation.
- H2: Co-creation has a positive impact on satisfaction.
- H3: Co-creation has a positive impact on trust.

2.1 The Relationship between Participation and Co-creation

Despite the fact that participation and collaboration are the forerunners of co-creation, this is not a trivial process, given the fact that corporations sometimes do not want to share their own ideas with the public (Mulder & Stappers, 2009).

Participation is one of the main characteristics of co-creation in which value is created with the cooperation of all stakeholders, mainly the customers (Lee et al., 2012). There are also some elements in order to develop a satisfactory co-creation process: "experience mindset, context of interactions for collective intelligence, engagement platform, and network relationships" (Lee et al., 2012, p. 828). To bring a service to life is inherent to customer participation, thus, it is not possible to separate the production phase from the consumption phase when we are talking about services (Ordanini & Pasini, 2008). Other researches had remarked this relationship (Gruner & Homburg, 2000; Shaw et al., 2011; Timmis, 2012).

2.2 The Relationship between Co-creation and Trust

In the e-commerce sector, it is analyse how co-creation experiences enhance customer trust in firms (Füller et al., 2011). In previously research, it has been analysed the customer relationship model under the hypothesis premise that firms that have a high level of interaction with costumers generate high levels of loyalty and trust (Malaviya & Spargo, 2002). The proposed model contains different levels, and it is possible to use it to assess the relationships between the clients and the firms in order to improve the decision-making process. Those different levels are utility need, convenience need, feeling-at-ease need, personal recognition need, self-expression need, and lastly, co-creation need.

It has been validated a model that reflected the antecedents and consequences of trust and satisfaction, in which the conversation between the seller and buyer is important to assure and preserve trust (Selnes, 1998).

Several studies reinforce the solidity of this tie (Terblanche, 2014; Dong et al., 2008; Palmatier et al., 2008).

2.3 The Relationship between Co-creation and Satisfaction

One of the principal objectives pursued by the marketers is the detection of new forms and strategies, such as co-creation, in order to raise the user's satisfaction (Grönroos, 2008).

It has been validated a model focused on co-creation by demonstrating the direct effect that co-creation has on satisfaction. In part, this relationship is explained by the customer's performance during the collaboration, where he feels a rewarding practice in the creation of value (Grisseemann & Stokburger-Sauer, 2012).

Studies have validated models in which satisfaction is a result of co-creation (Rajah et al., 2008). Also, a research commented on several frameworks adopted for 100 successful companies, in which the co-creation is defined as one of the innovative business models (Bowonder et al., 2010). This investigation also proposes a model that contains three dimensions present in innovative strategies, such as the customer excitement, the competitive leadership and the portfolio enrichment, and focuses on co-creation where collaborating with the consumer could create satisfaction for him. In the tourism sector, it has been concluded that, due to co-creation, clients feel more satisfied and are predisposed to spend more (Terblanche, 2014).

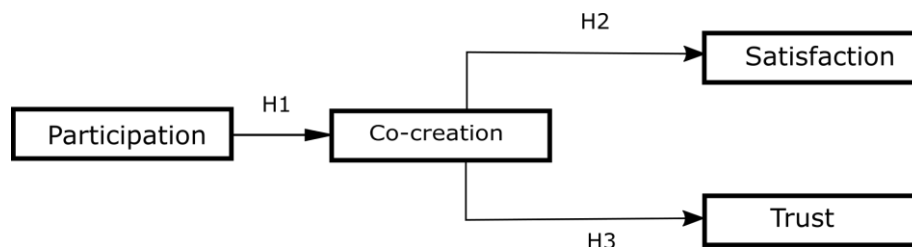


Figure 1. The Co-creation Model

3. Methodology and Results

It was applied a questionnaire to undergraduate students from different Ecuadorian universities, with a population of 395 results. Different questions were identified to measure the constructs in order to analyse the studied variables. In the case of co-creation were developed four questions, and for participation, trust and satisfaction three questions were applied for each one.

3.1. The Exploratory Factor Analysis

The EFA was employed to validate the instrument, using the SPSS program. Applying the extraction method of the Maximum Likelihood extraction and Varimax Rotation, four components were fixed (participation, co-creation, satisfaction and trust). They were found two conflicting items (one referred to trust and the other referred to satisfaction), and the final decision was to remove it. In the second EFA iteration, an excellent Cronbach's alpha about 0.926 (>0.7) was obtained. The explained variance was 66.53%, the Kaiser-Meyer-Olkin (KMO) value was 0.936 (>0.5), and the Bartlett test gave $p=.000$.

3.2. The Confirmatory Factor Analysis

The SPSS Amos program was applied in the second phase of the CFA. This phase allows to explore the relationship existing between constructs and items. The findings are shown in the Table 1, showing the composite reliability (CR) of the constructs are higher than 0.7. We can appreciate a convergent validity because the AVE is above 0.5 for each constructs. The discriminant validity was tested through the maximum shared variance (MSV) and the average shared variance, being less than or equal to the AVE, and the square root of AVE were greater than inter-construct correlations.

Table 1. Confirmatory Factor Analysis Results

	Composite Reliability (CR)	Average variance extracted (AVE)	Maximum Shared Variance (MSV)	Average Shared Variance (ASV)	Correlations among the constructs		
					Participation	Co-creation	Satisfaction
Participation	0,766	0,523	0,389	0,330			
Co-creation	0,896	0,684	0,643	0,550	0,624		
Satisfaction	0,838	0,721	0,674	0,546	0,566	0,802	
Trust	0,805	0,674	0,674	0,524	0,530	0,785	0,821

3.3. Structural Equation Modelling

SEM was applied to finally analyze the modeling of the interactions among the constructs. It was explored different indicators to validate the model fitting, where it was found that all of them had good values. In the Table 2 are presented the principal results. The squared multiple correlation of satisfaction showed that 0.694% of this element is explained by the direct effect of co-creation; and the 73.1% of the trust variance it is explained by co-creation.

Table 2. Structural equation modelling results

Model fit indicators	
CMIN/DF	3.754 (<5 acceptable)
CFI	0.958 (>0.95)
GFI	0.956 (>0.95)
AGFI	0.892 (>0.80)
SRMR	0.079 (<0.08)
RMSEA	0.08 (<=0.08)

4. Conclusions

The different statistical tools applied confirm the close relationships existing among the variables participation, co-creation, trust and satisfaction. All of them has a positive and significant impacts, confirming the previously proposed hypothesis:

- Participation has a positive and significant impact above co-creation ($\gamma = 0.624$, p-value <0.001).
- Co-creation has a positive and significant impact above satisfaction ($\beta = 0.802$, p-value <0.001).
- Co-creation has a positive and significant impact above trust ($\beta = 0.785$, p-value <0.001).

At this sense, it is important to remark the importance to apply the co-creation approach at the university field, with the objective to obtain higher levels of satisfaction and trust at undergraduate students. Taking into account that the ecuadorian higher education is developing actions to assure the quality in the teaching & learning, research and administration activities (Díaz & Rodríguez, 2014) co-creation is an effective alternative to support this process.

CHAPTER VIII
CONCLUSIONS

1. Conclusiones

En esta sección se muestran las principales contribuciones de la tesis doctoral.

Tal y como se describe en el capítulo 1, la presente tesis está formada por un compendio de artículos, la mayoría ya publicados en revistas y proceedings académicos internacionales, que pueden ser considerados de manera independiente y con sentido completo. Todos ellos, tratan sobre la co-creación en entidades universitarias, y a pesar de ser trabajos independientes, están unidos por el mismo hilo conductor y forman un trabajo completo y conjunto de investigación.

De este modo, la tesis consta de un total de 2 artículos publicados en revistas indexadas, 2 proceedings de congresos internacionales, 1 artículo aceptado para publicación y 1 artículo aceptado con modificaciones en revistas indexadas. De igual forma, en el apartado de Anexos, se muestra información de otros estudios (1 capítulo de libro publicado y 2 proceedings de congresos), que a pesar de que no se detallaron en el presente documento, fueron igualmente resultado de la investigación doctoral. Dichos trabajos constituyen el punto de partida de los restantes estudios desarrollados.

Como primera contribución significativa, la tesis profundiza primeramente de forma teórica, en la aplicación del enfoque co-creador, pero en el entorno universitario, centrándose en los programas de grado. Tomando en consideración el vacío existente en el campo académico sobre esta temática, se demuestra conceptualmente que la co-creación es de válida aplicación en el marco universitario, en aras de encontrar alternativas de gestión para ser aplicadas en dichas instituciones. De igual forma, se evidencia que la co-creación del valor fomenta el movimiento de los roles tradicionales del proceso educativo, donde se refuerza el papel activo y colaborativo del estudiante. Bajo esta perspectiva, el estudiante se involucra en procesos de aprendizaje y en la generación del conocimiento, a través de lo cual se incrementan las tasas de retención permitiendo a las universidades conocer realmente lo que el estudiante desea. Esta filosofía constructivista impacta igualmente de forma positiva en las habilidades comunicacionales y personales de los estudiantes, donde los mismos asumen un rol activo y responsable en su aprendizaje con una mejora en las prácticas de clase. Se potencia su autonomía, así como se incrementan los niveles de auto-confianza y de motivación.

La segunda contribución relevante de la presente tesis, es que se refuerzan conceptualmente los principales precursores de la co-creación (comunicación y participación), así como los principales resultados de la co-creación sobre el comportamiento del estudiante/cliente (satisfacción, lealtad, confianza) en ambientes universitarios de programas de grado. Se analizan las interrelaciones existentes entre dichas variables, y se construyen modelos teóricos que reflejan dichas conexiones.

Como tercera contribución, se valida estadísticamente un modelo centrado en los precursores de la co-creación, donde se evidencia cómo estas dos variables mantienen su alto impacto en la co-creación de programas de grado. Cabe destacar que la comunicación presenta un impacto mayor que la participación, siendo por ello vital reforzar los canales de diálogo en las IES.

La cuarta contribución corresponde a la validación empírica de un segundo modelo, el cual además de reforzar el modelo anteriormente comentado, incluye como nueva variable a la satisfacción. Es así que se comprueba el impacto positivo que posee la co-creación sobre la satisfacción de los estudiantes de grado, afectando así de manera favorable el comportamiento de los mismos.

En un estudio posterior (quinta contribución), se valida otro modelo, pero enfocado este en el impacto de la co-creación sobre la lealtad y confianza de los estudiantes de grado. Se demuestran los impactos positivos sobre estas dos nuevas variables, siendo el impacto sobre la lealtad mayor que el recogido por la confianza.

La validación estadística de un cuarto y último modelo refleja otra contribución del presente trabajo, donde las variables a analizar en este artículo son la participación, satisfacción y confianza de los estudiantes de grado, y sus interrelaciones con la co-creación. Dicha validación evidencia los impactos positivos resultantes de la co-creación sobre el comportamiento del estudiante referente a su satisfacción y confianza, teniendo dicho enfoque una incidencia mayor sobre la satisfacción.

Como conclusión de todos los modelos desarrollados y validados anteriormente se plantean a lo largo de la tesis diferentes alternativas para la implementación de este enfoque co-creador en las universidades en aras de impulsar la mejora del actual sistema universitario. Dentro de las alternativas se encuentran potenciar el co-diseño de los programas de estudios, lo cual permitirá mejorar el desempeño del estudiante, así como incrementar la responsabilidad grupal e individual. Dicha medida tendrá una afectación positiva en la satisfacción tanto del estudiantado como de los docentes.

De igual forma, se sugiere favorecer el co-desarrollo, co-difusión y co-aplicación del conocimiento, involucrando a los estudiantes en actividades de investigación y académicas, eliminando así las brechas existentes entre la enseñanza y las actividades de investigación. Dicha acción fortalecería el compromiso del estudiante con el conocimiento; así como se generarían habilidades en el estudiante como co-investigador. Se propone también implementar el enfoque de co-creación del valor en las clases, impulsando el cambio de la metodología de enseñanza-aprendizaje centrada en la participación de los estudiantes. A través de este nuevo enfoque se puede conocer realmente lo que los estudiantes desean, y los mismos se sentirán gratificados al ser escuchados. También se fortalecerá el compromiso y el progreso académico de

los estudiantes, mejorando las habilidades de comunicación y de desarrollo del pensamiento crítico.

Para potenciar los vínculos de comunicación, se avizora como una necesidad el desarrollo de canales de comunicación virtuales y físicos (sistemas de información, páginas web, blogs, multimedias, laboratorios virtuales) los cuales facilitarán un diálogo entre el estudiante y la universidad. De igual forma se deben habilitar herramientas que permitan no solo promover la comunicación, sino la participación y colaboración activa del estudiante. A través de estas prácticas co-creadoras, el estudiante se formará como una voz representativa en los temas universitarios, asegurando su compromiso con la evolución académica.

2. Limitaciones

Las limitaciones de la presente investigación radican en que no se profundizó en cómo debe implementarse el enfoque co-creador en las universidades. A pesar de que se confirma la viabilidad de su implementación y se realizan recomendaciones, no se establece una metodología o guía a seguir para dicha inserción.

Igualmente, el universo de programas incluidos en el estudio cuantitativo se vio afectado por las disponibilidades físicas y presupuestarias de la investigación, no pudiéndose abarcar en su totalidad a las universidades existentes en Ecuador. De la misma manera, no se analizaron las posibles diferencias de género existentes de comportamiento frente a la co-creación.

Otra de las limitaciones existentes es que la investigación se desarrolló solamente en el contexto ecuatoriano. Es posible que la particularidad de los elementos culturales y geográficos implique que los resultados no puedan generalizarse globalmente fuera de este contexto. Sería interesante y útil en el futuro, desarrollar estudios transversales similares en otros entornos para hacer comparaciones y analizar si se mantiene el mismo comportamiento estudiantil en términos de metodologías colaborativas.

3. Futuras Líneas de Investigación

A pesar de que el trabajo de investigación aporta nuevos elementos a la comunidad científica, se mantienen algunas áreas pendientes por reforzar, en las cuales se pretende continuar investigando en un futuro.

Se propone analizar las posibles diferencias existentes frente a la co-creación de varios grupos de estudiantes considerando las escuelas y facultades a las que pertenecen. Este análisis permitiría igualmente indagar en posibles diferencias según el género, pudiéndose detectar patrones existentes que muestren diferencias significativas en el comportamiento.

Igualmente sería valioso y oportuno profundizar en cómo deben cambiar los procesos universitarios para ejecutar la transición desde la visión rígida actual de la cadena de valor hacia una nueva, materializando el enfoque co-creador. Los beneficios de una gestión estratégica orientada hacia esta tendencia ya se han comprobado con anterioridad, pero la implementación y la acción de llevarla a cabo aún se mantienen como un terreno poco explorado.

Como resumen, remarcar que la presente tesis crea las bases para la implementación de la co-creación en programas de grado universitarios, reforzando los beneficios que dicho enfoque traerá a las instituciones de educación superior y a los estudiantes. Brinda una alternativa innovadora para el mercado universitario asumiendo a la co-creación como una herramienta estratégica a implementar en los procesos de gestión.

De forma global, y como cierre del trabajo de investigación desarrollado, se puede plantear que la aplicación de la co-creación del valor en entornos de programas de grado avizora el desarrollo de una ventaja competitiva para las instituciones universitarias. En la búsqueda de incrementar los niveles de competitividad, las instituciones de educación superior deben considerar el enfoque co-creativo como una forma de asegurar el involucramiento en las diferentes fases de la creación y entrega de los servicios con una disminución de los costos y un aumento en la satisfacción, lealtad y confianza del estudiante.

Por último, la universidad, al igual que cualquier organización, debe considerar implementar innovaciones en la teoría de los servicios, ya que dichos análisis pueden proveer de herramientas que tienen gran valor para una efectiva implementación de la nueva visión de co-creación del valor.

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APPENDIX

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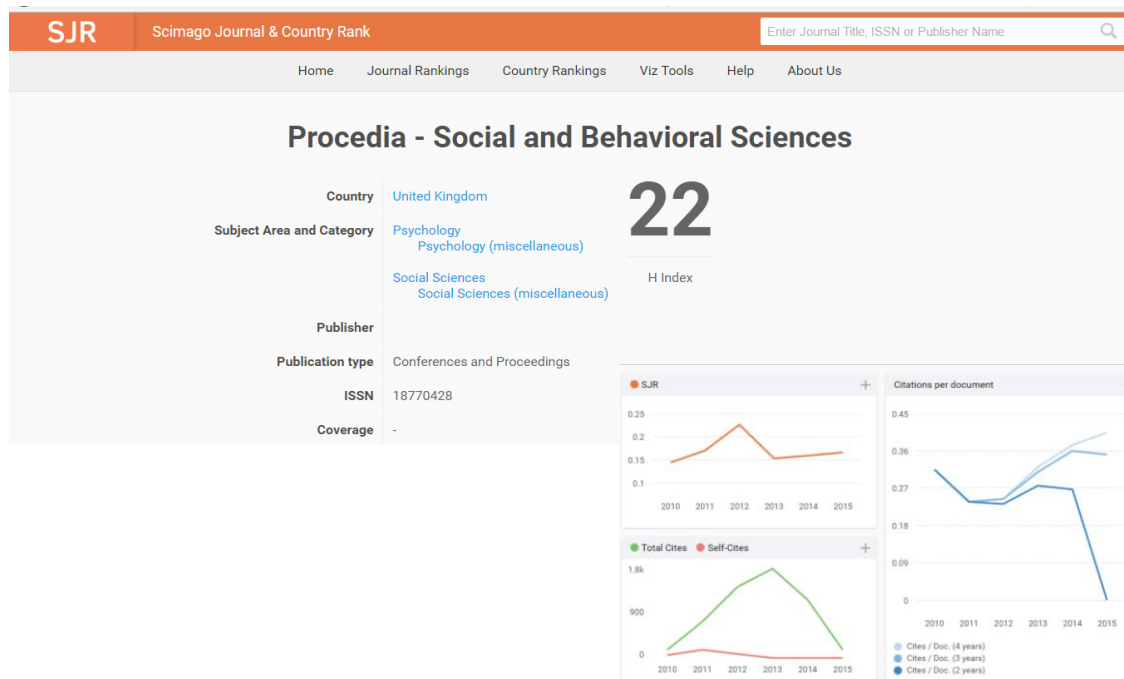
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Abstract

Co-creation is a new trend in business context aimed at fusing all the stakeholders, specially customers in different phase of creation and production of products and services (Ramaswamy & Gouillart, 2010; Bowonder et al.; Muñiz & Schau, 2011; Prahalad & Ramaswamy, 2004). Within this paper, the effects of co-creation approach at the university context are analyzed through a literature review. The objective is to examine the existing relationship among different variables which are present at co-creation process in higher education institutions. The studied variables are communicative participation, co-creation and satisfaction. The results show a positive impact of students' collaborations (as customers) on value co-creation; in addition of a high impact of co-creation on students' satisfaction. Finally, as a future research, it is suggested to carry out, using quantitative techniques, to bolster co-creation implications on scholar behavior.

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PUBLICATION PAPER 2:

Journal: International Journal of Engineering Education

Paper: “Co-creation in Undergraduate Engineering Programs: Effects of Communication and Student Participation.”

State: Accepted for publication with revisions needed.



Odette Pantoja <odettepantoja1980@gmail.com>

Manuscript: Co-creation in Undergraduate Engineering Programs: Effects of Communication and Student Participation

9 mensajes

Ijee <ijee.editor@gmail.com>

4 de septiembre de 2017, 17:50

Para: Odette Pantoja <odettepantoja1980@gmail.com>

CC: Gabriela Ribes Giner <gabri@upvnet.upv.es>, "M^a Rosario Perelló Marín (rperell@upvnet.upv.es)" <rperell@upvnet.upv.es>

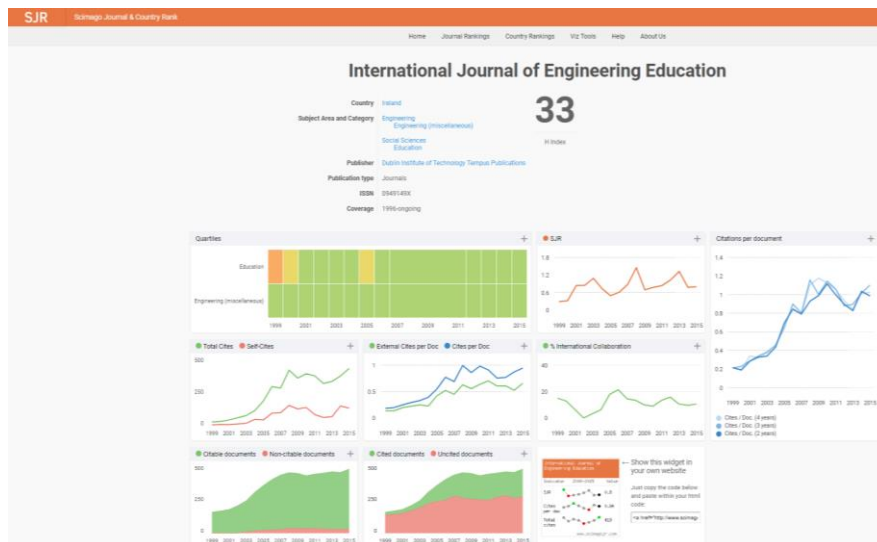
Greetings,

I am pleased to inform you that the manuscript with the title: *Co-creation in Undergraduate Engineering Programs: Effects of Communication and Student Participation*, was accepted for publication in the IJEE with revisions needed.

Please send along with the revised manuscript a separate document that outlines the response to all the comments of the reviewers.

Thank you.

Ahmad Ibrahim



PUBLICATION PAPER 3:

Journal: TEC Empresarial.

Paper: "Revisión sistemática de literatura de las variables claves del proceso de co-creación en las instituciones de educación superior."

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Odette Pantoja <odettepantoja1980@gmail.com>

Re artículo Revisión sistemática de literatura de las variables claves del proceso de co-creación en las instituciones de educación superior"

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12 de junio de 2017, 17:18

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Estimados autores del artículo: Revisión sistemática de literatura de las variables claves del proceso de co-creación en las instituciones de educación superior"

Agradecemos su confianza para postular su artículo de investigación científica a valoración para posible publicación en nuestra revista Tec Empresarial. Por este medio confirmamos su recepción. El artículo será sometido a valoración por revisores anónimos según nuestro procedimiento. Este proceso puede demorar hasta un máximo de 12 semanas.

Le mantendremos al tanto del proceso por esta vía.

Muchas gracias

Atte.

Equipo editorial

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Estimadas autoras

Me complace informar que el artículo ha sido aprobado para publicación en nuestro número 12(3) de noviembre próximo.

El siguiente paso es la revisión filológica. Nosotros nos encargamos de ella. Antes de pasarlo a nuestra asesora en la materia necesito por favor que completen en el adjunto lo siguiente: título en inglés, keywords y algunos datos de ustedes como autoras. Los señalé en amarillo. Además va un comentario inserto en el espacio para insertar las tablas. Por favor completen lo requerido y me lo devuelven para pasarlo a revisión. Cuando salga de revisión se los devuelvo para su aprobación antes de pasarlo a diagramación.

Muchas gracias

Saludos.



Odette Pantoja <odettepantoja1980@gmail.com>

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Estimados autores

Adjunto hallarán la versión final de su artículo ya revisado por la filóloga y previo a pasar a la fase de diagramación. Hemos incorporado los cambios y sugerencias de nuestra revisora filológica pero le pedimos que por favor lea usted el artículo y nos de su aval para continuar con el proceso.

En caso de no recibir respuesta de su parte en 72 horas asumiremos que está usted conforme y proseguiremos con el proceso.

Gracias por publicar con Tec Empresarial.

Equipo editorial

PUBLICATION PAPER 4:

Journal: Abstract and Applied Analysis.

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Research Article

The Impact of Cocreation on the Student Satisfaction: Analysis through Structural Equation Modeling

Odette Pantoja Díaz,^{1,2} Gabriela Ribes-Giner,¹ and María Rosario Perello-Marín¹

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The objective of this study is to apply the cocreation initiative as a marketing tool in the context of university undergraduate programs. Considering that cocreation is a practice that involves stakeholders in different phases of product production or service, this research analyzes the interactions between some of the factors during the cocreation process as students collaborate with the university. These factors are participation, communication, cocreation, and satisfaction, and this study focuses on how they fuse together at the moment of cocreation. After a literature review, which supplied the basis for creating a model, we used exploratory and confirmatory factor analysis and structural equation modeling to validate the hypothesized relations between the variables; finally, the proposed cocreation model was verified. The results could empower academic institutions to develop managerial strategies in order to increase students' collaboration and satisfaction.

1. Cocreation and the University

Higher education has been involved in recent trends such as the increasing competition in the university market, budget reductions, the internalization of education, the growth of quality standards, and clients (students) becoming more demanding and competitive in the recruitment market. Facing this situation, universities need to reevaluate their strategies and gain a marketing orientation [1, 2] in order to avoid the intense competitive force [3].

Higher education institutions generate alternatives to increase their loyalty rates through active interaction with the student. Considering that consumer satisfaction positively affects loyalty [4], a strategic goal for universities is to enhance student satisfaction.

At the current research, cocreation is conducted as a marketing alternative to increase the institutions' service satisfaction at the educational level. Cocreation assures interactions and connections among different stakeholders, generating communications and collaborative ties among them [5]. This approach allows the companies to generate

value through client participation, with an active role during the service process or product production [6] assuring a competitive advantage in the market [7].

Although the university world differs considerably from the business sector, academic institutions are looking to increase their service quality and stakeholder satisfaction in order to gain a competitive advantage in the current situation [8]. Thus cocreation is analyzed with the objective to research the impact of students' inclusion in activities such as curriculum and program development and the teaching-learning process. The importation of cocreation to higher education institutions allows universities to adopt a marketing orientation to seek excellence and recognize quality levels.

The purpose of this investigation is to fill the existing gap in the academic market and to determine whether it is plausible to apply cocreation at higher education institutions. This viability is explored in terms of the impact of the two principal factors (participation and communication) on the cocreation process and the impact of cocreation on student satisfaction. Researching the links among those elements will permit us to confirm whether cocreation is

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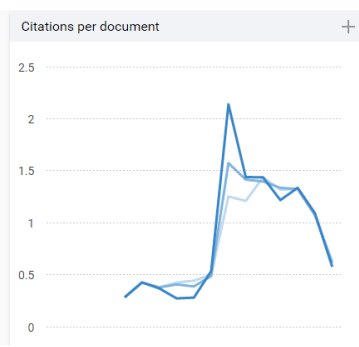
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These Workshop Proceedings are a collection of abstracts and working papers, i.e., manuscript versions of academic articles still incomplete or in progress. They are offered here in the interests of acknowledging authorship to the Scientific and Organizing committees of this Academic Workshop, and promoting a constructive debate during the event.

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CO-CREATION IMPACTS IN STUDENT LOYALTY

Abstract

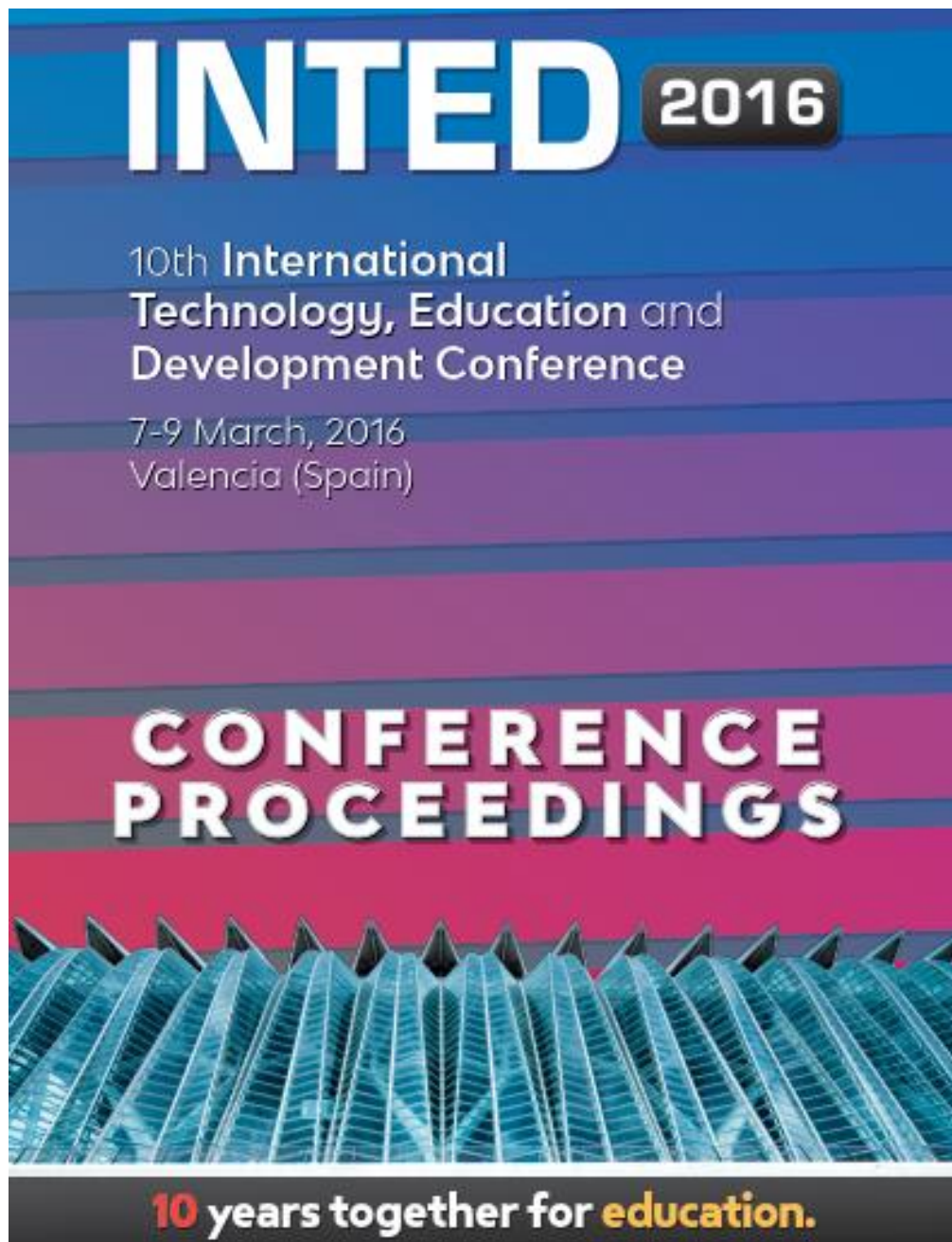
In the present study the impact of co-creation on student's behavior in higher institution context is analyzed . Following Service-dominant logic in co-creation, we aim to study this approach at the university environment, in order to reinforce strategic management solutions. In so doing, co-creation impacts in trust and student loyalty has been analyzed from a service dominant logic perspective. Considering students as an important stakeholder in the academic development, a co-creation model focused on them has been defined. After confirming the relationship between the construct identified (co-creation, trust

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CO-CREATION AT HIGHER EDUCATION INSTITUTIONS

O. Pantoja Díaz¹, G. Ribes-Giner², M.R. Perello-Marín²

¹ *Escuela Politécnica Nacional (ECUADOR)*

² *Universidad Politécnica de Valencia (SPAIN)*

Abstract

The present research focuses in the application of Co-creation at higher education institutions, with the objective to apply management tools at the university context. Taking into account that co-creation is born when the stakeholders have an active participation from the initial phase of idea generation to the delivery process, we have been focused in the university environment, considering the student as a value generator at the academic field. In this sense, there were identified and studied several variables that interact during the Co-creation events, such as participation, communication, trust and satisfaction, and the relationship existing among them were identified. The statistical tools applied are mainly the Exploratory Factor Analysis, Confirmatory Factor Analysis and the Structural Equation Modelling, in order to validate the proposed model which includes the variables mentioned previously and their interaction with co-creation. The application of co-creation at HEI brings to the university a new way to manage their students, with positive results that evidence the increasing rates in trust and students satisfaction.

Keywords: Co-creation, Trust, Satisfaction, Participation, Higher Education.

1 INTRODUCTION

The application of the co-creation methodology to the university scope is quite an unexplored field. Some studies have dabbled in the application of this strategy in postgraduate programs, and have also studied the different tools used in this field [1, 2].

Nowadays, the university is facing an increasing higher market offering, where the competition among the institutions is strong. Due to the crisis that is affecting all the branches of the economy, the public institutions suffer budget reductions. On the other hand, the students are increasingly becoming informed and with greater mobility capacities, fostering the internationalization of education.

Taking into account the growth of quality standards at the education market, and clients that are more exquisite and exigent, the higher education institutions are forced to adopt strategical decision to face the actual situation.

It is a real necessity to re-evaluate the universities mission and their strategies, to survive and gain competitive advantage in front the competence.

At this sense, it is appropriate to evaluate the possibility to apply a Co-creation approach at the university context, to improve the academic management, centring the attention at the student participation and collaboration.

2 THE PROPOSED MODEL

The conceptual model proposed at the present research is shown in the Fig. 1. This model contains four main variables: participation, co-creation, satisfaction and trust.

The participation is focused on the personal interaction between the clients and the employees [3], where the customer is actively engaged in a co-production process [4]. Another vision considers the customer as a partial employee of the service providers [5].

Co-creation has gained importance in the business world, linking together clients and consumers at the very first stage of the idea conception for products and services creation. Innovative firms develop channels to establish links with all involved stakeholders, where the service success is conditioned to how each participant performs its corresponding functions [6-8].

Satisfaction includes the way in which the students feel about the educational and the academic service they are receiving. Satisfaction benefits are numerous, such as increasing customer loyalty,

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Applying the Structural Equation Model to Co-creation in Degree Programs in Ecuadorian Universities

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España,

November 30, 2015

1 Abstract

Although a number of studies have been carried out on co-creation in innovative marketing, only a few apply this approach to higher education. The aim of this paper is to study the links between participation, communication, co-creation and satisfaction in undergraduate programs, in order to validate a model that could be applied in this field to enhance strategic management. In this approach the student is considered the cornerstone of the collaboration and a valuable stakeholder in the academic process. The literature was reviewed for topics supporting the proposed model and Structural Equation Modeling was applied to validate it. The results demonstrate that co-creation is an innovative approach that guarantees higher levels of satisfaction in the university context.

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A Review of Co-Creation Process and the University Services

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Nowadays, Co-creation has gained importance in the business world, linking together clients and consumers at the very first stage of the idea conception for products and services creation (Muñiz, Schau, 2011; Rech Ionara; Bowonder et al., 2010; Prahalad and Ramaswamy, 2004; Ramaswamy, Gouillart, 2010; Ber, 2009; Etgar, 2007). Several approaches and criteria are given by specialists in the subject, but the evidence suggests that Co-creation is not a trivial process to implement (Gustafsson et al., 2012; Kristensson et al., 2008; Sandere, Stappers, 2008; Payne et al., 2007).

Innovative firms develop channels to establish links with all involved stakeholders, where the service success is conditioned to how each participant perform its corresponding functions (Muñiz, Schau, 2011; Ramaswamy, Gouillart, 2010; Bettencourt et al., 2013). It is also of great importance that consumers interact with the firm technology, personnel, and processes during the creation and delivery of services (Bolton, Saxena-Iyer, 2009; Bettencourt et al., 2013). Today's customers are more informed and engaged, demanding organizations to provide valuable services (Prahalad, Ramaswamy, 2004). With the customer's involvement from the initial stages of services and/or products creation, the firms increase its capacity to add value during the creation process, transforming market and business practices (Gustafsson et al., 2012). Co-creation service has become a largest source of strategic advantage for companies cultivating the ability to use the insight gained from consumers, competitors and their own abilities to create meaningful and distinguished services (Bolton, Saxena-Iyer, 2009; Bettencourt et al., 2013; Witell et al., 2011).

Objectives

The aim of this work is to investigate the co-creation method, and analyses existing models and implementation of open-innovation techniques. This will reveal whether it has been implemented previously in universities and detect patterns that underpin future studies. This research will facilitate the future development, design and validation of a co-creation model of undergraduate programs in higher education institutions.

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A Service Co-Creation Model for Undergraduated Programmes

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Co-creation has been flourished in the business world with the aim of involving clients and consumers from the starting point of ideas and concepts generation of products and services. Several approaches and criteria are given by specialists in the subject, but is not a trivial process to implement (Gustafsson et al., 2012; Kristensson et al., 2008; Sanders, Stappers, 2008; Payne et al., 2007).

Through the costumers insights it is possible to obtain a powerfully stream of knowledge, and engaging them in collaborative and participatory tasks, the co-creation is successfully accomplish (Auh et al., 2007; Greer, Lei, 2012). Ordanini and Pasini (2008) reflect the impossibility of service consumption without costumer participation, and this interaction make possible to create value through co-creation (Yi and Gong, 2013; Etgar, 2007), being the participation a meaningful promoter of this process.

Also, the communication between firms and clients has an important influence in the co-creation (Pralhad, Ramaswamy, 2004b; Lundkvist, Yakhlef, 2004), and it constitutes one of the building block (dialogue) of co-creation in the DART (Dialogue, Access, Risk and Transparence) model (Pralhad, Ramaswamy, 2004a). Whereas the communications between both parts (consumers and enterprise) is gaining legibility in what exactly the clients want, being they essential in co-created products and services (Auh et al., 2007; Gustafsson et al, 2012; Rexfelt et al., 2011; Witell et al., 2011), which causes the focus existing in the information exchange (Gruner, Homburg, 2000). The co-creation approach has been empowered by the communication technology revolution (Rajah et al., 2008a), acting as a tool that leads customer and suppliers to an efficiency resource utilization (Payne et al., 2007; Yi, Gong, 2013).

One of the most important co-creation effects is the increase of satisfaction, caused by the generation of value through the customer (Umashankar, 2001). Many authors Bowonder et al. (2010); Ramaswamy and Gouillart (2010); Grönroos (2008); Rajah et al. (2008b); Ordanini and Pasini (2008); Auh et al. (2007) support the positive influence that have this open innovation in the clients gratification, reflecting that their participation in the co-creation process influence the final product quality and increase the satisfaction level. All the experiences gained during the co-creation makes the client feel safe and in agreement with their creative involvement, and therefore satisfied (Füller et al., 2011; Dong et al., 2008).