

**INVOLVEMENT OF CENTRAL LUZON STATE UNIVERSITY FACULTY MEMBERS
IN RESEARCH AND DEVELOPMENT PROJECTS**

PAOLO CARL E. SOLIVEN

An undergraduate thesis submitted to the faculty of College of Arts and Sciences,
Central Luzon State University, Science City of Muñoz,
Nueva Ecija, Philippines in partial fulfillment
of the requirements for the degree

BACHELOR OF SCIENCE IN DEVELOPMENT COMMUNICATION

JANUARY 2018



Republic of the Philippines
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija

COLLEGE OF ARTS AND SCIENCES
Department of Development Communication


APPROVAL SHEET

This undergraduate thesis entitled **INVOLVEMENT OF CENTRAL LUZON STATE UNIVERSITY FACULTY MEMBERS IN RESEARCH AND DEVELOPMENT PROJECTS** prepared, presented and submitted by **PAOLO CARL E. SOLIVEN** in partial fulfilment of the requirements for the degree, **BACHELOR OF SCIENCE IN DEVELOPMENT COMMUNICATION**, is hereby approved and accepted.


MARIA THERESA G. MANGABAT
Adviser

1-31-18

Date


DANILO S. VARGAS
Critic

1-31-18


Date


LUZ A. JOVE
Department Research Coordinator
Department of Development Communication

1-31-18


Date

Accepted in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE IN DEVELOPMENT COMMUNICATION**.


DANILO S. VARGAS
Department Chair
Department of Development Communication

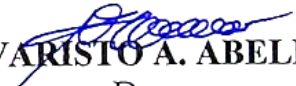
1-31-18

Date


RICH MILTON R. DULAY
College Research Coordinator
College of Arts and Sciences

1-31-18

Date


EVARISTO A. ABELLA
Dean
College of Arts and Sciences

2-1-2018

Date

BIOGRAPHICAL SKETCH

The author, Paolo Carl Encarnacion Soliven was born on May 7, 1997 and is residing at Bukang Liwayway Bantug, Science City of Muñoz, Nueva Ecija. He is the youngest among the two children of Mr. Marcos C. Soliven and Mrs. Amelita Soliven

He took his primary education at DepEd-CLSU Elementary Laboratory School and graduated in 2009, continuing his secondary education at San Sebastian School. He graduated from high school in 2013. During his high school days, he was a member of the Teatro Sebastino, a theater club. He was also a Cadet Lieutenant Colonel S5 Officer in their Citizen Advancement Training (CAT). He pursued college at Central Luzon State University as a Common First Year (CFY) student in the EN Section. Unfortunately he failed to qualify for the Civil Engineering course and he was included in the CFY-Free Section. Again he failed to qualify for the civil engineering course. The Almighty must had a plan for him. He was destined to be in a different course program. Finally he did not resist the will of the Lord and chose a different course. Fate decided for him to take a Bachelor of Science degree in Development Communication.

In his college life, he actively joined different affiliations, groups and organizations. He was a folk dancer at the Gintong Ani Philippines (GAP-CLSU) since 2013. He was also a proud member of a non-college based organization, the CLSU-Society for the Advancement of Japanese Arts and Culture (CLSU-SAJAC) since 2014 and took hold the positions of Public Relations Officer (A.Y. 2015-2016, 2nd semester), Extension Head Committee (A.Y. 2016-2017, 1st semester), and Recruitment Head Committee (A.Y. 2016-2017, 2nd semester). He also joined a college-based organization, Communicators for Development (CODE) as a member since 2015 and took the position of Vice President (A.Y. 2016-2017). Besides joining and being affiliated with organizations, he also served his fellow DevComm Students as an officer in the Development Communication Council and took hold the positions of Treasurer (A.Y. 2015- 2016 & A.Y. 2016- 2017) and Internal Auditor (A.Y. 2017- 2018). In his senior year in college, he joined The CAS- Lens, a student publication of the College of Arts and Sciences (CAS) as a

Senior Writer (A.Y. 2017-2018). He was also assigned as the layout artist on their community news paper and feature magazine in their course subject requirement.

Hopefully, the fiery determination within him could help him finish his studies in college. He is eager to finish his bachelor's degree in order for him to help and support his parents and family.

ACKNOWLEDGMENT

The author would like to extend his deepest acknowledgment to the people who encouraged, enlightened, and supported him throughout this study.

The very foundation on formulating this study would not be possible if it was not put together and recommended by none other than, Dr. Danilo S. Vargas. He also served as the critic for this study. Dr. Vargas carefully scrutinized and gave his suggestion to make this study possible.

To the author's adviser, Ma'am Maria Theresa G. Mangabat, the study would not be possible without her exceptional supervision and reliable guidance. She also provided encouraging words whenever the author was down, tens or pressured. The author also appreciates the support of the faculty members from the Department of Development Communication: Ma'am Joy Nicole Lucero, Ma'am Marife De Torres and Ma'am Jocelyn Dollente.

Also to the offices that assisted the author in the conduct of the study: the Human Resource and Management Office (HRMO) for granting the request for classified documents; the Office of the Vice President for Academic Affairs (VPAA) for the approval of the gathering of data for the study; the college dean and secretaries of the College of Agriculture, College of Arts and Sciences, College of Business Administration and Accountancy, College of Education, College of Engineering, College of Fisheries, College of Home Science and Industry, College of Veterinary Science and Medicine, and to all the faculty members who cooperated and supported this study, thank you.

As for the statistical analysis of the study, it would not be possible without the professional service of Ma'am Ella Mae Joyce Paragas. Special thanks also to Ma'am Maria Yna Diane Manalastas for putting the last piece of the analysis.

The author would like to highlight the contribution of Ma'am Marjorie Manlulu as the English editor for this study. Even though she was on her study leave, she gladly helped the author. Without her aid, the study would still be stuck on the mud.

To his friends and classmates, the author, would like to give thanks: Mr. Paul John Pangilinan, for help out on the data gathering and analysis; Mr. Kent Edward Ballesteros as a friend, a fellow Devcomm student, and a senior mentor ; Ms. Karen G. Nalliw as being a life mentor, counselor, and the most trusted ‘Mommy Senpai’; Ms. Georilyn Rodriguez and Ms. Kathleen Sangalang, as friends and co-advisee during the study; Ms. Precious Gabato, Ms. Jeneriese Carrion, Ms. Kristine Joy Bahum, and Wilbeth Gonzales for sharing information and answering queries; Mr. Mark Christopher Vuida for suggesting his article as a citable literature; the author’s ever-supportive batchee Christel, batchee Nicole, batchee Jacky and sis Angelica; to all of his classmates BSDC dash one – “thanks you guys for all the experience and memories, love you guys”; to the author’s CODE family “*Viva CODE!*”, CLSU- SAJAC family “*Banzai~SAJAC!*” and to Nijiuro, my children “*Chichiue loves you all!*”

Finally, the author would like to express his deepest love and gratitude to his parents and family. To his father Mr. Marcos C. Soliven, for supporting his financial needs and to his mother Mrs. Amelita E. Soliven, who supported him whole heartedly and believed that his son will finish this study “*love you, ma!*”. This wouldn’t be complete without the his older sister Princes Carl E. Soliven, who trusted and supported her little brother even though he was being spoiled but say no more “*Ate, hindi kita bibiguin!*”.

And lastly, to the almighty God who created everything. When we work, we work; but when we pray, God works. And as long with faith in God “*I can do everything through him who gives me strength!*” Philippians 4:13, Holy Bible (NIV)

PAOLO CARL E. SOLIVEN

TABLE OF CONTENTS

	PAGE
LIST OF TABLES	ix
LIST OF FIGURES	xi
LIST OF APPENDICES	xii
ABSTRACT	xiii
THE PROBLEM AND ITS BACKGROUND	
Introduction	2
Significance of the Study	3
Problem Statement	3
Objectives of the Study	4
Hypothesis of the Study	4
Time and Place of the Study	4
Scope and Limitation of the Study	5
REVIEW OF RELATED LITERATURE	
Research and Development Projects	6
Communication Characteristics	7
Faculty and Workload	8
Faculty and Involvement to R&D Projects	11
Faculty and R&D Projects	11
METHODOLOGY	
Theoretical and Conceptual Framework	14
Research Paradigm	16
Research Design	17
Sampling Design	17
Data Collection Technique	19
The Instrument	20
Statistical Treatment of Data	20
Operational Definition of Terms	20
RESULT AND DISCUSSION	
Socio-demographic Faculty Profile	22
Faculty Workload	24
Communication Characteristics	27
Involvement in Research and Development Projects	31

Stages of Involvement	33
Problems Encountered by the Faculty in their Involvement in R&D Projects	38
Relationship between Socio-demographic Profile and Faculty Workload	43
Relationship between Communication Characteristics and Faculty Workload	46
Relationship between Faculty Workload and the Involvement to R&D Projects	61
 SUMMARY, CONCLUSION, AND RECOMMENDATION	
Summary	63
Conclusion	65
Recommendation	66
 LITERATURE CITED	 67
 APPENDICES	 73

LIST OF TABLES

TABLE		PAGE
1	Distribution of sample size to colleges	18
2	Retrieval of questionnaires	19
3	Criteria for level of involvement	21
4	Socio-demographic profile of the respondents	23
5	Faculty workload	25
6	Quantity of publication	26
7	Materials produced	27
8	Source of R&D projects	27
9	R&D topics	28
10	Channel of information	29
11	Utilization of information from R&D projects	30
12	Benefits/Incentives from R&D projects	31
13	Involvement of faculty members to R&D projects and the reasons some faculty members are not involved.	33
14	Faculty members' involvement in R&D conceptualization stage.	34
15	Faculty members' involvement in R&D proposal preparation stage	35
16	Faculty members' involvement in R&D proposal finalization stage.	36
17	Faculty members' involvement in R&D proposal submission/presentation stage.	36
18	Faculty members' involvement in R&D conduct of R/D projects stage.	37
19	Summary of the level of involvement of CLSU faculty members	38
20	Problems encountered by the faculty members in their involvement to R&D	40

TABLE		PAGE
21	Reasons perceived by the faculty members why other faculty members are not involved in R&D projects	41
22	Other problems encountered by faculty members that are involved in R&D projects	42
23	Possible solutions that faculty members involved to R&D projects suggested	43
24	Relationship between the socio-demographic profile and faculty workload	44
25	Relationship between communication characteristics on source of R&D projects and faculty workload	46
26	Relationship between communication characteristics on R&D topics and faculty workload	49
27	Relationship between communication characteristics on types of channel and faculty workload	52
28	Relationship between communication characteristics on information utilization on R&D projects and faculty workload	55
29	Relationship between communication characteristics on benefits/incentives received from R&D and faculty workload	58
30	Relationship between the faculty workload and the involvement to R&D project	62

LIST OF FIGURE

FIGURE		PAGE
1	Research paradigm of the involvement of CLSU faculty to research and development projects in CLSU	16

LIST OF APPENDICES

ATTACHMENT		PAGE
A	Letter to HRMO	74
B	Letter to the VPAA	75
C	CLSU Faculty Population from HRMO	76
D	Sample Questionnaire	77

ABSTRACT

SOLIVEN, PAOLO CARL E., “INVOLVEMENT OF CENTRAL LUZON STATE UNIVERSITY FACULTY TO RESEARCH AND DEVELOPMENT PROJECTS IN CLSU” Bachelor of Science in Development Communication, Department of Development Communication, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija. July 2017.

Adviser: **MARIA THERESA G. MANGABAT**

Research and Development (R&D) is an important component for national advancement and these projects are considered functions on academia and the industry. Nowadays, Higher Education Institutions (HEI) such as colleges and universities are major contributors' in generating new knowledge and technologies and also in development projects for improvement and innovation. Faculty members of HEIs are not only educators but also researchers and inventors. This study seeks to generate new knowledge on the limited existing studies on faculty members involvement in research and development (R&D) projects. It aimed to point out the cause of the low levels of involvement in R&D Programs.

Sixty-one faculty members answered the questionnaire. They were chosen using a combination of stratified and simple random sampling as the sampling method. Based on the gathered data results, majority of the faculty members of CLSU are involved in research and development projects and more than half of the faculty members involved in R&D are into research. According to the response of the faculty members who were not involved in R&D, majority answered having no time and funding. Faculty members view overload units on instructions, lack of resources such as equipment and facilities, and funds for R&D projects as problems. The main reason why other faculty members were not involved in R&D projects was overload on teaching.

LITERATURE CITED

- ABAD ALZUMAN, P. 2015. *Faculty Research Productivity In Saudi Arabian Public Universities: A Human Capital Investment Perspective*. Virginia Commonwealth University. Richmond, Virginia, USA.
- AFZAL, A. F. S. 2016. *The Attitudes of Agricultural Extension Workers*. King Saud University. Riyadh Saudi Arabia
- AGUADO, C. L., O. B. GARCIA, J. M. LAGUADOR, AND J. C. L. DELIGERO. 2015. *Teaching Performance and Extent of Work Values among Faculty Members in one Asian Maritime Academy*. International Journal of Management Sciences. Research Academy of Social Science. Retrieved from <http://www.rassweb.org/>
- AKERS, K. AND J. DOTY. 2013. The International Journal of Digital Curation. In *Disciplinary Differences in Faculty Research Data Management Practices and Perspectives* (p. 6). Claverton Down, Bath, UK. Retrieved from <http://www.ijdc.net/article/view/8.2.5/332>
- ALCAINE, J. G. 2016. *Factors Affecting Institutional Performance At High And Very High Research Universities: Policy Implications*. Virginia Commonwealth University. . Richmond, Virginia, USA.
- AMATRIAIN, X. 2016. *What are the major differences between research in academia and in industry?* Retrieved March 2017, from <https://www.quora.com/What-are-the-major-differences-between-research-in-academia-and-in-industry>
- BAKER, N. R., J. SIEGMAN, AND A. H. RUBENSTEIN. 2013. *The effects of perceived needs and means on the generation of ideas for industrial research and development projects*. Retrieved March 2017, from <http://ieeexplore.ieee.org/abstract/document/6446983/?reload=true>
- BEST, K. W. 2016. *Understanding The Impact Of A Global Universal Design For Learning (Udl) Virtual Classroom On Jamaican Educators Through The Lens Of How People Learn (Hpl)*. Virginia Commonwealth University. Richmond, Virginia, USA.
- BLAHA, L. M. 2015. *An extension of workload capacity space for systems with more than two channels*. Retrieved March 2017, from ScienceDirect: <http://www.sciencedirect.com/science/article/pii/S0022249615000036>

- BONDAREV, M., E. ZASHCHITINA, AND J. E. ANDREASSEN. 2016. Student International Research Project on Employees' Involvement in Innovation: Experience and Outcomes. In *Key Directions and Characteristics of Research Organization in Contemporary World*. BCES Conference Books 2016, Vol. 14 (2). Norway; Russia.
- BUMGARNER, H. J. 2015. *The National Board Certification Process As Professional Development: Perceptions About The Impact That Characteristics Of The Process Had On Professional Growth*. Virginia Commonwealth University. Richmond, Virginia, USA.
- CALLON, M. 1986. "Some Elements of Sociology of Translation: Domestication of the Scallops and the Fisherman of St Briuec Bay". In John Law (ed.), *Power, Action and Belief: A New Sociology of Knowledge*. Routledge London. Howick Place, London, UK.
- CALLON, M. AND B. LATOUR. 1981. Unscrewing the Big Leviathan: How Actors Macrostructure Reality and Sociologists help them to do so. In Knorr-Cetina and Cicourel (Eds.) *Advances in Social Theory and Methodology: Towards an Integration of Micro- and Macro-Sociologies* (pp. 227-303). Routledge London. Howick Place, London, UK.
- CARROLL, N., I. RICHARDSON, AND E. WHELAN. 2012. *Service science: an actor-network theory approach*. *International Journal of Actor-Network Theory and Technological Innovation (IJANTTI)*;4 (3), pp. 51-69. Castletroy, Limerick, Ireland.
- CARROLL, N. 2014. *Actor-Network Theory: A Bureaucratic View of Public Service Innovation*, Chapter 7, Technological Advancements and the Impact of Actor-Network Theory, pp. 115-144, Publisher IGI Global, Hershey, PA
- COLEMAN, J. C. 2014. *A Study of a Professional Development Initiative to Increase Cultural Competency*. Virginia Commonwealth University. Richmond, Virginia, USA.
- CLSU. 2015. Central Luzon State University. Science City of Muñoz, Nueva Ecija, Philippines.
- DE GUZMAN, J. D. 2014. *Research Productivity of Faculty Members in Selected Teacher Education Institution*. Central Luzon State University. Science City of Muñoz, Nueva Ecija, Philippines.
- DIXON, M. R., D. D. REED, T. SMITH, J. BELISLE, AND R. E. JACKSON. 2015. *Research Rankings of Behavior Analytic Graduate Training Programs and Their Faculty*. Association for Behavior Analysis International. Retrieved from National Center for Biotechnology Information: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5048259/>

- DOYLE, A. 2017. *Top 10 Communication Skills for Workplace Success*. Retrieved June 2017, from thebalance.com: <https://www.thebalance.com/communication-skills-list-2063779>
- FLUID SURVEYS TEAM. 2014. *Descriptive Research: Defining Your Respondents and Drawing Conclusions*. Retrieved June 2017, from fluidsurveys.com: <http://fluidsurveys.com/university/descriptive-research-defining-respondents-drawing-conclusions/>
- HANOVER RESEARCH. 2014. *Building a Culture of Research: Recommended Practices*. Academy Administration Practice. Arlington, USA.
- HENSCHEL, M. M. 2016. *A Multiple-Site Case Study of Two University Teacher Induction Programs Using Different Methods of Delivery*. Virginia Commonwealth University. Richmond, Virginia, USA
- IMPEDOVO, M. A., AND S. K. MALIK. 2016. *Becoming a Reflective In-service Teacher: Role of Research Attitude*. Retrieved from <http://ro.ecu.edu.au/ajte/vol41/iss1/6>
- INCREMENTALINNOVATION. 2012. *Incrementalinnovation.com*. Retrieved 2017, from The Importance of R&D to Innovation: <http://www.incrementalinnovation.com/innovation-management-development/rd-to-innovation>
- INSTITUTE OF BIOLOGICAL SCIENCES. 2014. *IBS Extension Activities and Services*. Retrieved June 2017, from ibs.uplb.edu.ph: <https://ibs.uplb.edu.ph/2014-10-05-15-34-53/extension-projects>
- INVESTOPEDIA. 2015. *Research And Development - R&D*. Retrieved March 2017, from <http://www.investopedia.com/terms/r/randd.asp>
- JONES, D. A. 2015. *Teachers' professionalism, self-identity and the impact of Continuing Professional Development (CPD)*. Manchester Metropolitan University.
- JONES, R. 2015. *Innovation, research and development, and the UK's productivity Crisis*. Retrieved June 2017, from [softmachines.org: http://www.softmachines.org/wordpress/?p=1653](http://www.softmachines.org/wordpress/?p=1653)
- KNIPE, L. 2017. Retrieved June 2017, from *The benefits of R&D reliefs:* <http://www.belfasttelegraph.co.uk/business/help-advice/the-benefits-of-rd-reliefs-35500236.html>

- KOTRLA, D. 2013. 6 *Common Characteristics of Effective Communicators*. Retrieved June 2017, from vanderbloemen.com: <https://www.vanderbloemen.com/blog/6-common-characteristics-of-effective-communicators>
- LAMANTIA MD,J., S. J. HAMSTRA PHD, D. R. MARTIN MD, N. SEARLE EDD, J. LOVE MD, JILL CASTANEDA, R. AZIZ-BOSE, M. SMITH MD, S. GRISWOLD-THERODORSON MD, J. LEUCK MD. 2012. *WILEY ONLINE LIBRARY*. Retrieved March 2017, from Faculty Development in Medical Education Research.
- LATOUR, B. 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press. Oxford, England, UK
- LAW, J. 1992. *Notes on the Theory of the Actor Network: ordering, Strategy and Heterogeneity*. Lancaster: Centre for Science Studies, Lancaster University. Lancaster, England, UK.
- LAW, J. 1999 *Traduction/Trahison: Notes on ANT*. Lancaster: Centre for Science Studies, Lancaster University. Lancaster, England, UK.
- LIBERATORE, M. J. 2013. *An extension of the analytic hierarchy process for industrial R&D project selection and resource allocation*. Retrieved March 2017, from <http://ieeexplore.ieee.org/document/6498854/>
- LINK, A. N. AND M. WRIGHT. 2015. *On the Failure of R&D Projects*. Retrieved March 2017, from <http://ieeexplore.ieee.org/document/7054476/>
- LYTVYN, V., V. VYSOTSKA, L. CHYRUN, AND L. CHYRUN. 2016. *Distance learning method for modern youth promotion and involvement in independent scientific researches*. Retrieved March 2017, from <http://ieeexplore.ieee.org/document/7583557/>
- MA,J., W. XU, Y. SUN, E. TURBAN, S. WANG, AND O. LIU. 2012. *An Ontology-Based Text-Mining Method to Cluster Proposals for Research Project Selection*. Retrieved March 2017, from <http://ieeexplore.ieee.org/document/6171866/>
- MARBLE, S. C. 2017. *Advantages and Disadvantages of Asynchronous Online Extension Programming for Delivering Master Producer Content*. Retrieved March 2017, from HortTechnology: <http://horttech.ashspublications.org/content/26/5/584.short>
- MARTELLI, A. 2013. *The 7 characteristics of effective communication*. Retrieved June 2017, from [mtmtranslations.com: http://www.mtntranslations.com/english-blog/the-7-characteristics-of-effective-communication](http://www.mtntranslations.com/english-blog/the-7-characteristics-of-effective-communication)

- MEINERS, J. D. 2016. In *A Phenomenological Study of Professional and Practical Changes Experienced by Teachers Involved with Action Research in a Learning Community Master's Program*. Minnesota State University. Mankato, Minnesota, USA.
- MOBERTZ, L. 2014. *R&D Partnerships: Benefits and Considerations*. Retrieved June 2017, from LinkedIn.com: <https://www.linkedin.com/pulse/20141119195459-128708255-r-d-partnerships-benefits-and-considerations>
- NOLASCO, T. L. 2014. Opinion: *Advancing R&D in the Philippines*. Retrieved June 2017, from bworldonline.com: <http://www.bworldonline.com/content.php?section=Opinion&title=advancing-r&38d-in-the-philippines&id=88157>
- PARK, J. 2015. *Determinants of Turnover Intent in Higher Education: The Case of International and U.S. Faculty*. Virginia Commonwealth University. Richmond, Virginia, USA.
- POLESTAR GROUP. 2017. *Staying ahead - embracing new technologies in a new digital world*. Retrieved from Page 3: The importance of Research and Development: <http://businesscasestudies.co.uk/polestar-group/staying-ahead-embracing-new-technologies-in-a-new-digital-world/the-importance-of-research-and-development.html>
- RESEARCH AND DEVELOPMENT (R&D) COLLABORATION*. 2017. Retrieved June 2017, from canada.ca: <https://www.canada.ca/en/services/science/innovation/collaboration.html>
- R&D INDUSTRY COLLABORATION BRINGING IDEAS TO THE MARKET*. 2016. Retrieved June 2017, from arena.gov.au: <https://arena.gov.au/news/rd-industry-collaboration-bringing-ideas-to-the-market/>
- SHEIKH, A. S. F., S. A. SHEIKH, A. KALEEM & A. WAQAS. 2013. Retrieved 2017, *Factors contributing to lack of interest in research among medical students*: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3826903/>
- SHOEMAKER, J. 2014. *Ramblings of a Gifted Teacher*. Retrieved June 2017, from Enrichment vs. Extension In the Regular Classroom: <https://ramblingsofagiftedteacher.wordpress.com/2014/04/04/enrichment-vs-extension-in-the-regular-classroom/>
- STATEUNIVERSITY.COM*. 2017. Retrieved 2017, from Faculty Roles and Responsibilities - The Teaching Role, The Research Role, The Service Role, Integration of Faculty Roles and Responsibilities: <http://education.stateuniversity.com/pages/1972/Faculty-Roles-Responsibilities.html#ixzz4b2bjNSsl>

- STRONG, J. E. 2014. *Preparing Teachers of Students with Autism Spectrum Disorders: Evidence-Based Practices and Teacher Self-Efficacy*. Virginia Commonwealth University. Richmond, Virginia, USA.
- TARVER, E. 2015. *Investopedia*. Retrieved March 2017, from Why should companies invest in research and development?: <http://www.investopedia.com/ask/answers/060115/why-should-companies-invest-research-and-development.asp>
- UNIVERSITY OF ARIZONA. 2012. *College of Agriculture and Life Sciences, Cooperative Extension*. University of Arizona. Tucson, Arizona, USA.
- VEUGELERS, R. 2014. *The Contribution of Academic Research to Innovation Growth*. Arsenal Wien, Austria.
- VIUDA, M. C. 2016. Abella: "Engage More in Research". *CLSU Publication Collegian* , p. 3. Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines.
- ZHANG, L. AND H. HUNG. 2016. *Beyond F-Formations: Determining Social Involvement in Free Standing Conversing Groups from Static Images*. Retrieved March 2017, from <http://ieeexplore.ieee.org/document/7780492/>
- ZULKANAIN, N.A., E.E.A. RAHIM, AND F. F.AZIZAN. 2017. *IEE Xplore*. Retrieved March 2017, from Exploratory study on the relationship of students' perceptions towards the instructors' involvement in Second Life: <http://ieeexplore.ieee.org/document/7857942/>