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Application of Participatory Research Model in the College Research and Development Program

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Abstract: Research is a portmanteau and has always been the catch-all and niche of a university. The internationalization of universities and colleges implores significant challenges to institutional compliance to its internal and external quality management system. Amongst the university pitfalls during accreditation is its underperformance in the research area. This paper discusses and presents the College of Computer Science Participatory Research Model which aimed at raising the bar of research production to publication. This contribution provides the implication of the model integrated into the College Research Development Program. Participatory Research Model is an approach to the research program in the academic and professional communities which emphasized participation and collaboration. A Research Capability Matrix has been used to capture the participants' research profile. A Concurrent Transformative Research Design was used in the study. Based on the Research Capability Matrix and Data Analysis, results showed that the professional and academic communities need careful and extensive research support for knowledge generation, resource allocation and networking. Funding and research dissemination must be provided. Therefore, the university and college administrator must provide research programs which are within the college and university research agenda and that further support to its faculty must be established. A College Research Manual is recommended and that further studies on the effectiveness of the program must be conducted. The results of this study will be used as a basis for policies redirection on the Research and Development Program.

Keywords: Participatory research, Research model, Research capability matrix, Concurrent transformative design

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INTRODUCTION

Research is a collaborative enterprise to ascertain novel knowledge. Research is a portmanteau and has always been the catch-all and niche of a university. A university which is a higher education institution and research is a community of scholars with their respective expertise and scholarly interest. The 2016 Quacquarelli Symonds (QS) World University Rankings has placed the country's premier research university, University of the Philippines ranked 374th, top 501-550 for the Ateneo de Manila University and 701+ for De La Salle University and University of Santo Tomas. In 2016, QS Asia University Rankings, the University of the Philippines was ranked 70th, 99th for Ateneo de Manila University, 143rd for De La Salle University and 157th for the University of Santo Tomas. The QS World University Rankings adopt a methodology which consists of 6 indicators: academic reputation (40%), employer reputation (10%), and the student-to-faculty ratio (20%), citations per faculty (20%), international faculty ratio (5%) and international student ratio (5%).

A university professor is responsible for the advancement and the maximizer of diffusion of knowledge (Neumann & Finaly-Neumann, 1990) must extricate the equal significance of instruction, research, and service as a support system for the realization of the major goals of universities. Teaching is significantly thrilled as input to research (Becker Jr, 1975) and service as social responsibility is beheld of equal

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importance to research (Park, 1996). Research as one of the major functions of the university faculty has long been attributed to impact the academic community on its Research and Development Initiatives, innovations and scaffolds in technologies and classrooms, research productivity such as publications of papers and reports, presentation to public conferences and colloquia, informal information exchange and citation (Cohen, Nelson & Walsh, 2002; Feller, Ailes & Roessner, 2002).

The university behavior towards improving the publication performance of the university faculty is based on the institutionalization of the culture of research. Most academic research is contract research but the university or college must emphasize the importance of collaboration (Lee, 1996). Perkmann and Walsh (2009) posited that university-industry collaboration in engineering suggested that basic projects are more likely to yield academically valuable knowledge than applied projects and that research enables comprehension of how it informs and influences the practice of science education, hence externally funded and performed research also equates importance in the relevant area necessary to achieve high productivity in particular aspects of academic research (Mansfield, 1995; Gunstone, White & Fensham, 1988). The internationalization of universities and colleges implores significant challenges to institutional compliance to its internal and external quality management system. Amongst the university pitfalls during accreditation is its underperformance in the research area. The university and college shall entice strong leadership at the dean and department level (Pratt, Margaritis & Coy, 1999) which are critical to developing research management culture.

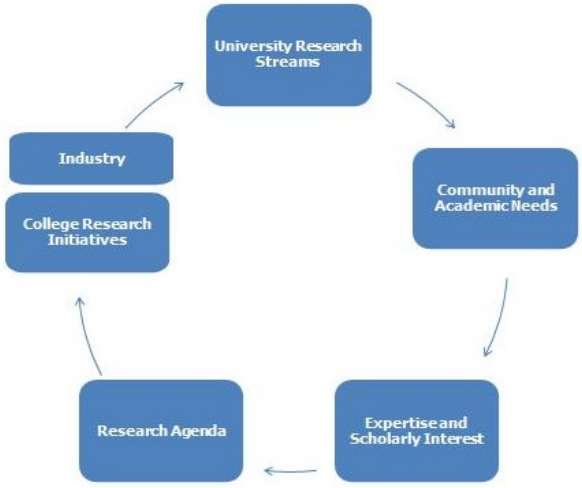

Figure 1. The participatory research model

The College of Computer Science Participatory Research Model staged main key focus areas for collaboration and participatory endeavors. The University of Makati through its Research and Library Resource Center (RARLC) strives for excellence in providing comprehensive resources and services in support of the academic programs, research materials for its faculty and students. The university research streams are aligned with the Community and Academic needs including the real-world problems. The design is based on the scholarly interest of the faculty, their expertise and research-related trainings. A College Research Agenda is devised to augment with College needs in terms of number of researchers in presentation and publications. The College Research Committee will spearhead research activities and initiatives including industry linkages for research utilization and potential funding for resource generation.

Objectives of the study

This paper presents the College of Computer Science Participatory Research Model which aimed to improve the bar of research production to publication. This contribution explores research initiatives using the model integrated into the College Research Development Program. Collaboration and Participatory Research Model is an approach to the research program in the academic and professional communities which emphasized participation and collaboration.

METHODOLOGY

A Concurrent Transformative Research Design was used in the study, in which data were gathered simultaneously. The authors used the mixed methodology of quantitative and qualitative. On the quantitative context, the Descriptive Secondary Data Analysis (Dasig Jr, 2014) was used. A Research Capability Matrix has been administered to capture the participants' research profile. The Quantitative data have been gathered using the researcher's designed questionnaire administered online using the Survey Monkey, an online platform. The instrument consists of two parts; Part I is the demographics of the participants and Part II is the Research Capability Matrix (RCM). The result of the RCM has been used to develop the CCS Research Agenda and Research Initiatives.

RESULTS AND DISCUSSION

College academic and research profile

Departments

The participants covered in this study are composed of 88.89% from the Software Department and 11.11% from the Hardware Department of College of Computer Science of University of Makati, Makati City, Philippines. These faculty members are also handling courses of General Information Technology Department of the same college. General I.T. courses are those offered in the Higher School ng University of Makati (HSU) Senior High School curriculum. The table 1 shows the tabular distribution of participants by department, and figure 1 depicts the graphical participants' distribution by department.

Table 1: The participants' distribution by department

Department	
Software Department	88.89%
Harware Deparment	11.11%

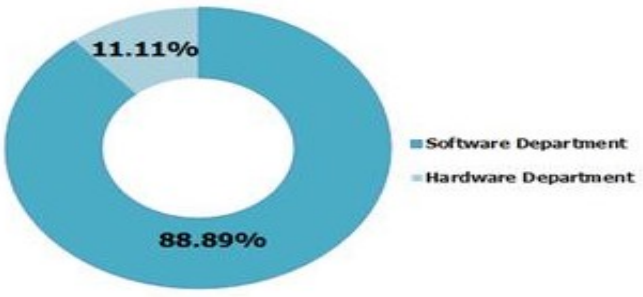

Figure 2. The graphical distribution of participants by department

Highest educational attainment

Based on table 2, there were 33.33% of the CCS faculty participants holding Ph.D./EDM/EdD degree or graduate of any doctoral program, 11.11% had earned unit in doctoral program, 44.44% held Master's Degree and 11.11% had some masteral units or were completing a coursework or upon program completion.

Table 2: The participants' distribution by highest educational attainment

Highest Educational Attainment	
Doctorate Graduate	33.33%
Some units in Doctoral	11.11%
Master's Graduate	44.44%
Some units in Masteral	11.11%

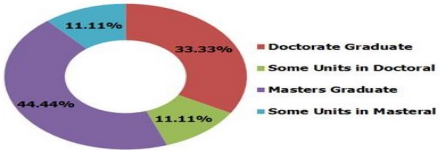

Figure 3. The graphical distribution of participants by highest educational attainment

Research and books publication (international, local or institutional)
The university professor or faculty is expected to produce and publish scholarly works to promote knowledge creation as a collaborative enterprise. Publication of scholarly articles may be in the form of online or printed format which is distributed or indexed by academic search databases, academic or technical journals, conference proceedings, books or learning modules published internationally, locally or even institutionally. Publication is attributed to be scholarly and must have been peer reviewed in full. In this study, faculty participants reported having 22.22% of the faculty having less than 5 articles and books published, 44.44% of the faculty had more than 1 article and books published available for public use, and 33.33% of the participants had no publication at all.

Table 3: The participants' research and books publication

Research and Books Publication (International, Local or Institutional)	
More than 20 articles and books	0.00%
Less than 20 articles and books	0.00%
More than 10 articles and books	0.00%
Less than 10 articles and books	0.00%
More than 5 articles and books	0.00%
Less than 5 articles and books	22.22%
More than 1 articles and books	44.44%
No publication	33.33%

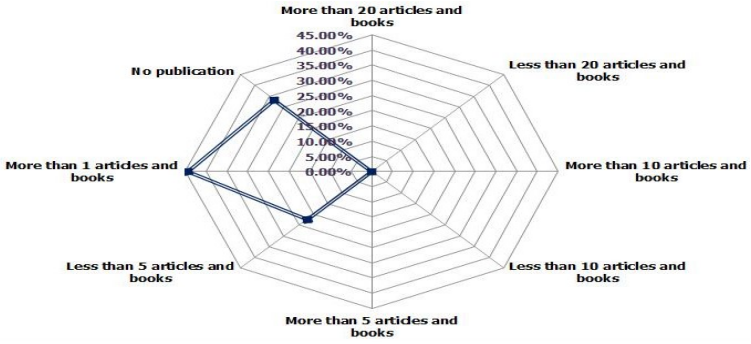

Figure 4. The graphical distribution of participants' publication

Research presentation (international, local or institutional)
Research dissemination or presentation is among the endeavors common to a scholarly community. Researchers, faculty and industry practitioners in the discipline assemble to share the results of their studies, innovations and best practices. During conferences, colloquia, and summit, a researcher informs, persuades the audience and builds the personality of his scholarly contribution to the existing knowledge. The proceedings of the conference are sometimes indexed by academic databases and will be published based on the quality and paper relevance and contribution. Table 4 shows the tabular results of the study and figure 4 depicts the graphical distribution of CCS faculty research presentation in which only 22.22% of faculty had less than 5 presentations, 22.22% had more than 1 presentation and 55.56% of CCS faculty had no research presentation at all.

Table 4: The participants' research presentation

Research presentation (International, Local or Institutional)	
More than 20 presentations	0.00%
Less than 20 presentations	0.00%
More than 10 presentations	0.00%
Less than 10 presentations	0.00%
More than 5 presentations	0.00%
Less than 5 presentations	22.22%
More than 1 presentations	22.22%
No research presentation	55.56%

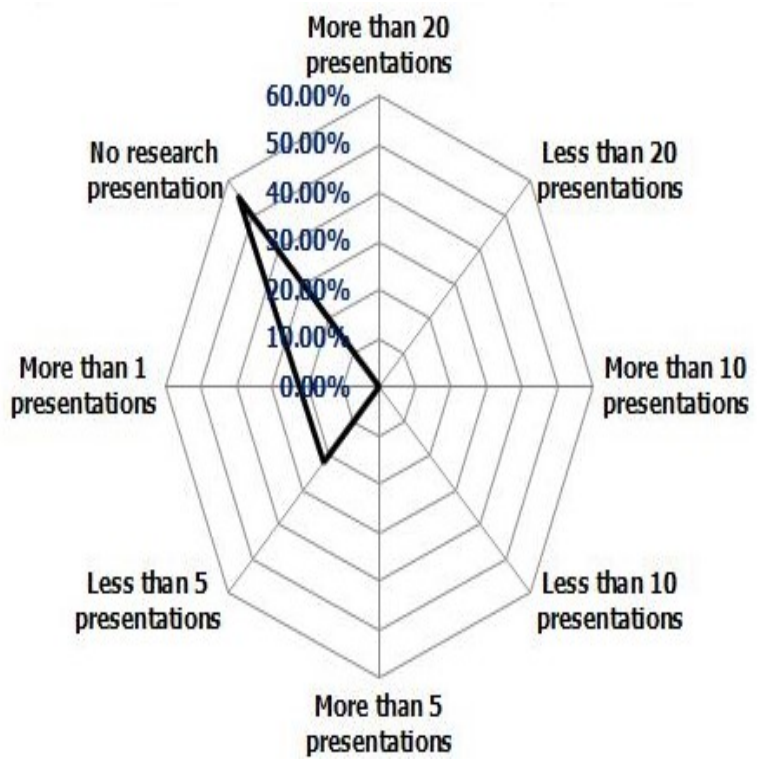

Figure 5. The graphical distribution of participants' research presentation

Research capability matrix

The Research Capability Matrix (RCM) has been designed and developed which forms part of the overarching College of Computer Science Research Performance and Expectations for its faculty research and professional development. The RCM describes the research fundamental and functional capabilities required to effectively produce a quality and camera-ready paper. The matrix also can be used in a spiral progressive approach with the same capabilities from a beginner to an expert researcher. Research capabilities presented here include the ability to search academic databases, determine applicability of using research and benchmarking, use graphs versus words to help draw conclusions, design & conduct research that utilized interviews, design and conduct research that utilized focus groups, design & conduct research that utilized large group sessions, design & conduct a diary study or review of archival information (i.e. email communications) to analyze current state, partner with peers to analyze data, identify patterns in data to help client see the system in different ways, make connections between different sources of data, identify a question or problem to solve, create a hypothesis and gather data to test that hypothesis, use of quantitative and statistical tools, and use of qualitative analyses, tools and application software.

Table 5: The participants' research capability matrix

Capability and Tools in Research	Never	Seldom	Sometimes	Oftentimes	Always
Search Google *Scholar'	11.11%	0.00%	22.22%	22.22%	44.44%
Search academic databases	11.11%	0.00%	55.56%	22.22%	11.11%
Determine applicability of using research and benchmarking	0.00%	11.11%	22.22%	44.44%	22.22%
Use graphs versus words to help dray: conclusions	11.11%	11.11%	11.11%	33.33%	33.33%
Design & conduct research that utilized interviews	11.11%	33.33%	33.33%	11.11%	11.11%
Design and conduct research that utilized focus groups	11.11%	33.33%	33.33%	11.11%	11.11%
Design & conduct research that utilized large group sessions	33.33%	33.33%	11.11%	11.11%	11.11%
Design & conduct a diary study or review of archival information (i.e. emails, communications) to analyze current state	0.00%	33.33%	44.44%	11.11%	11.11%
Partner with peers to analyze data	11.11%	11.11%	44.44%	22.22%	11.11%
Identify patterns in data to help client see the system in different ways Make connections between different sources of data	0.00%	33.33%	22.22%	33.33%	11.11%
Identify a question or problem to solve, crate a hypothesis and gather data to test that hypothesis	0.00%	22.22%	22.22%	44.44%	11.11%
Use of quantitative and statistical tools	0.00%	22.22%	11.11%	55.56%	11.11%
Use of qualitative analyses, tools and application softwares	11.11%	22.22%	33.33%	22.22%	11.11%

*Search Google *scholar**

Most commonly used tool in conducting researches is the Google Scholar. Google Scholar is an online, freely accessible search engine which allows the users or researchers to look for both physical and digital copies of articles, books, and other publications. Google Scholar searches various sources related to the researchers keyword range from academic publishers, university online journals, online books, pdf and electronic copies of dissertations, website and other web resources and preprint repositories which are peer-reviewed. Google scholar indexes and collects related search articles from databases. Based on the Research Capability Matrix, CCS faculty used this tool in conducting research with the following frequencies and percentages of faculty; 11.11% (Never), 0.00 % (Seldom), 22.22% (Sometimes), 22.22% (Oftentimes) and 44.44% (Always). Google Scholar also provides a formatted citation using MLA, APA, Chicago, Harvard and Vancouver styles that can be directly imported into the researcher's bibliography manager.

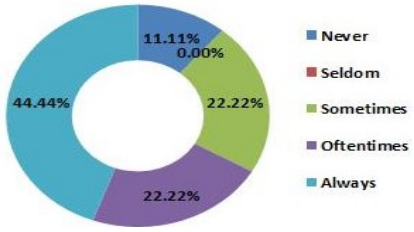

Figure 6. The graphical distribution of participants' ability and frequency of using Google scholar

Search academic databases

Another important capability of a researcher is to properly use academic search databases either for free or subscription fees research databases for students, researchers, and librarians. Most commonly used in HEI are the ProQuest, Scopus, Web science ISI, ACM, IEEE, Academic Search Premier and other university academic databases and journals. These databases maintain books, chapters, indexed high-quality and peer-reviewed full papers and abstracts. The ProQuest features a highly-respected, diversified mix of scholarly journals, trade publications, and magazines. The Academic Search Premier indexing and abstracting service covers more than 8,500 full-text periodicals, including more than 7,300 peer-reviewed journals. The Scopus is a bibliographic database containing abstracts and citations for academic journal articles. It covers nearly 22,000 titles from over 5,000 publishers and the Web of Science is an online subscription-based scientific citation indexing service originally produced by the Institute for Scientific Information (ISI). For computing science and engineering and technology for which papers are technical in nature, the ACM and IEEE organizations maintain a digital library also.

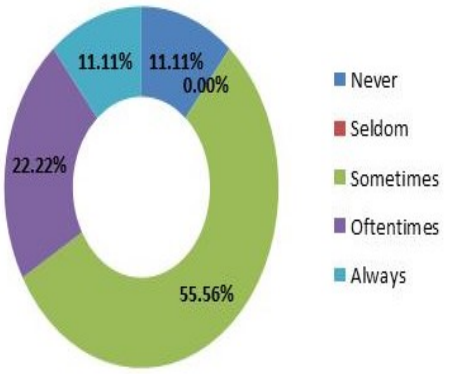

Figure 7. The graphical distribution of participants' ability and frequency of using search academic databases

ACM Digital Library indexed and abstracted the world's largest educational and scientific computing society, delivers resources that advance computing as a science and a profession while IEEE Xplore Digital Library provides full-text access to the world's highest quality technical papers and proceedings from conferences. CCS faculty has the capability to use search academic databases with the following frequencies and percentages of faculty usage. There are 11.11% who never used academic databases, 55.56% of the faculty sometimes used it, 22.22% frequently used academic databases search and 11.11% always used it in research.

Determine applicability of using research and benchmarking

Another capability in RCM is the ability to determine the applicability of using research and benchmarking. It is the faculty's ability to rapidly learn and determine the applicability of their research to the discipline, its contribution to the existing knowledge by advancing it and provide a cutting and leading edge. Based on the graphical illustrations in figure 7, there were 11.11% who were seldom able to determine the application of their research and benchmarking, 22.22% sometimes could determine the applicability, 44.44% oftentimes and only 22.22% CCS faculty could always determine the application of their research and benchmarking.

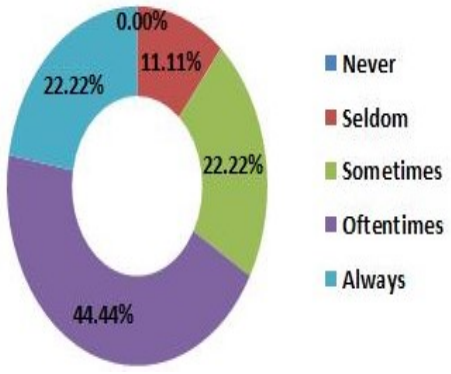

Figure 8. The graphical distribution of participants' ability and frequency to determine applicability of using research and benchmarking

Use graphs versus words to help draw conclusions

In a nutshell, tables, graphs, and figures help researchers draw results and conclusions. It is necessary for a faculty member and researcher to know and be able to interpret graphs and able to determine appropriate words which will provide a significant link from the problem to the results and generalization. There were 11.11% of the participants who were never able to use graphs versus words to help draw conclusions, the same percentage of faculty who used it seldom and sometimes, while there were 33.33% who used graphs versus words to help draw conclusion frequently and the same 33.33% could use it always.

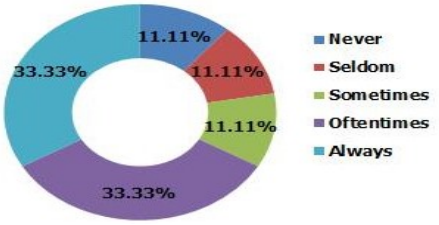

Figure 9. The graphical distribution of participants' ability and frequency to use graphs versus words to help draw conclusions

Design & conduct research that utilized interviews

Conducting interview is the most commonly used data gathering technique in research. Either structured or semi-structured way, researcher must be able to design interview instrument and handle the interview successfully. There were 11.11% (never), 33.33%, 33.33%, 11.11%, and 11.11% (always) of the participants who were able to design & conduct research that utilized interviews.

Design and conduct research that utilized focus groups

Whenever the interview results could not suffice with the data needed in the study, a researcher may opt to conduct a focus group discussion with consideration on the attributes of the participants. The same distribution with those CCS faculty who can design and conduct research that utilized interviews; there were 11.11% (never), 33.33%, 33.33%, 11.11%, and 11.11% (always) of the participants who were able to design & conduct research that utilized focus group as reflected in figure 9.

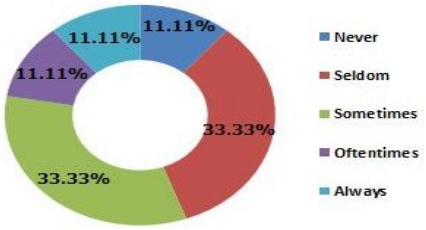

Figure 10. The graphical distribution of participants' ability and frequency to design & conduct research that utilized interviews; and those who could design and conduct research that utilized focus groups

Design & conduct research that utilized large group sessions

The group discussion and large group sessions are among the data gathering tools used in research. This can be conducted several times with similar types of participants in which the researcher might want to know barriers in participation. Conducting large group sessions will yield a variety of data outcomes from the variety of insights, therefore a researcher should have the ability to handle it. The design should be based on the instrument and the type of data to be gathered. There were 33.33% of CCS faculty who never designed & conducted a research that utilized large group sessions, 33.33% seldom did it, and the same 11.11% of those designed and utilized large groups sessions sometimes, frequently and always.

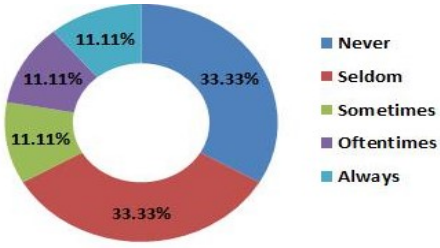

Figure 11. The graphical distribution of participants' ability and frequency to design & conduct research that utilized large group sessions

Design & conduct a diary study or review of archival information (i.e. email communications) to analyze current state

Another form of research best practices is using the diary studies which are a form of longitudinal research or a type of research that takes place over a long period of time with the same participants. Using this context, the users or researchers self-report their activities at regular intervals to create a log of their activities, thoughts, and other perceived experiences. Personal communications such as emails are also considered as data gathering. Email is widely used as a form of business communication and overall it is a highly effective communication tool.

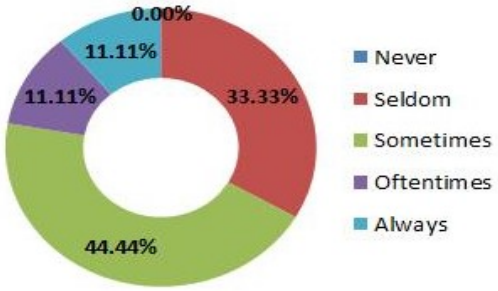

Figure 12. The graphical distribution of participants' ability and frequency to design & conduct a diary study or review of archival information (i.e. email communications) to analyze current state

There are 33.33% who seldom used their ability to design & conduct a diary study or review of archival information (i.e. email communications) to analyze current state, 44.44% for sometimes, 11.11% for oftentimes and there were 11.11% who had their ability and always used it for their research undertaking.

Partner with peers to analyze data

Accuracy and timeliness of the data commonly referred to as data integrity are always the compelling reason why the comparison is paramount. Working with peers provides functional motivation in conducting peer group analysis as research alternative, improved research collaboration and initiate opportunities. At the CCS, there were 11.11% who never used this, 11.11% of faculty had the ability but seldom applied; 44.44% sometimes used it, 22.22% of faculty who frequently used it, and only 11.11% of the participants had always been using this ability.

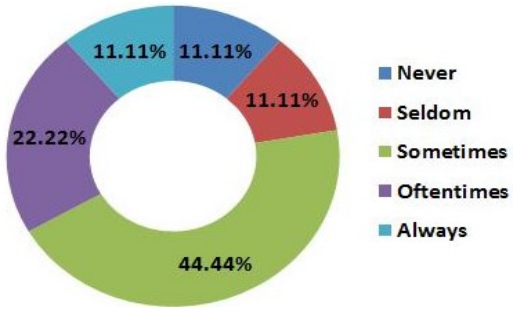

Figure 13. The graphical distribution of participants' ability and frequency to partner with peers to analyze data

Identify patterns in data to help client see the system in different ways

In the ability to identify patterns in data to help client see the system in different ways; there were 33.33% of CCS Faculty who seldom used it, 22.22% sometimes used it, 33.33% and 11.11% for those who used this ability oftentimes and always.

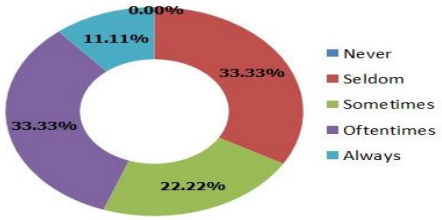

Figure 14. The graphical distribution of participants' ability and frequency to identify patterns in data to help client see the system in different ways

Make connections between different sources of data

Another researcher's ability is to make connections between different sources of data. Sources may come from the results of data gathering techniques using instruments such as survey questionnaires, interview, focus group discussion, large group discussion, online survey, primary and secondary sources, online periodicals, online journals and publication and other form of secondary data analysis. There were 22.22% of CCS faculty who seldom/sometimes applied this, 44.44% who frequently used it and 11.11% of faculty who always did and had the ability to make connections between different sources of data.

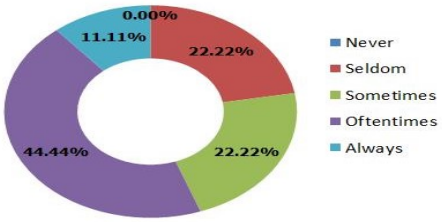

Figure 15. The graphical distribution of participants' ability and frequency to make connections between different sources of data

Identify a question or problem to solve, create a hypothesis and gather data to test that hypothesis

There were 22.22% of faculty who had the ability and seldom used it, 11.11% of them sometimes used it, 55.56% who oftentimes used it and there were 11.11% who had the ability and always identified a question or problem to solve, created a hypothesis and gathered data to test that hypothesis.

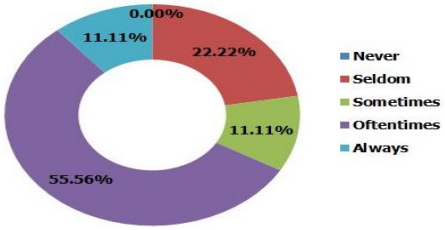

Figure 16. The graphical distribution of participants' ability and frequency to identify a question or problem to solve, create a hypothesis and gather data to test that hypothesis

Use of quantitative and statistical tools

The skills and ability to use quantitative research design are important to a researcher and faculty. Quantitative tools allow the researcher to develop, investigate and analyze human knowledge through the use of empirical data expressed in the quantitative form such as statistical tools. Statistical measures may be descriptive or inferential. Descriptive statistics include frequencies, means, standard deviation, median, mode, range, variance, skewness, and kurtosis. While inferential-parametric includes T-test, ANOVA, Pearson's Correlation, Linear Regression, and the nonparametric are Mann-Whitney U Test, Kruskal-Wallis test, Chi-square test, and Wilcoxon test. There were 22.22% of CCS faculty who seldom used the quantitative and statistical tools, 11.11% sometimes used it, while there were 55.56% and 11.11% who used the quantitative and statistical tools frequently and always respectively.

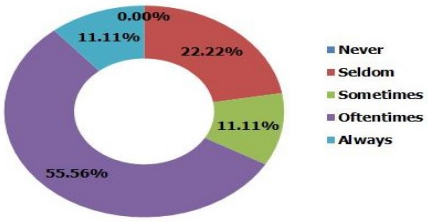

Figure 17. The graphical distribution of participants' ability and frequency to use of quantitative and statistical tools

Use of qualitative analyses, tools and application software

Qualitative data analysis tools and techniques assist researcher with transcription, coding, and abstraction content analysis. In an interview transcript, for example, the transcription can be analyzed using content analysis, discourse analysis, textual interpretation and identifying thematic patterns. Observation notes focus group discussions, interview, email communications, telephone interview data that can be analyzed using software. Among the software are the Computer Assisted qualitative data analysis, QDA Miner, CATMA, and CAT or Coding Analysis Toolkit. There were 11.11% of the participants who never used these methodologies and software, 22.22% of the faculty seldom used it, 33.33% sometimes used it, and 22.22% frequently used it, and 11.11% of the participants used the qualitative analyses, tools and application software.

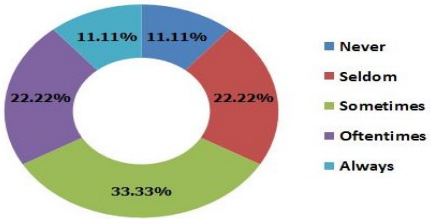

Figure 18. The graphical distribution of participants' ability and frequency to use qualitative analyses, tools and application software

Importance and relevance of research to your work

Table 6: Variables of the analysis

Importance and relevance of research to your work	Strongly Disagree	Disagree	Agree	Strongly Agree
Overall, I would like to learn more about these research methods and how to incorporate them into my work.	11.11%	0.00%	22.22%	66.67%
I feel research is relevant to the vtork we do.	11.11%	0.00%	11.11%	77.78%
I feel that doing collaborative research will help me produce more publishable papers.	11.11%	0.00%	11.11%	77.78%

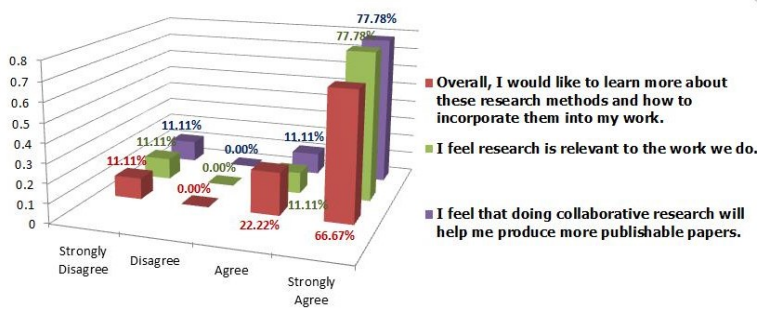

Figure 19. The graphical distribution of participants' responses on the importance and relevance of research to their work

Table 6 and figure 18 provide the Tabular and Graphical Distribution of participants' responses on the importance and relevance of research to their work as University Faculty. There were 11.11% of faculty who Strongly Disagreed, 22.22% (Agree) and there were 66.67% who Strongly Agreed that they need to learn more about these research methods and how to incorporate them into their work. Also, there were 77.78% of the participants who Strongly Agreed and felt that research is relevant to the work, 11.11% Strongly Disagreed and Agreed respectively. On the other hand, there were 77.78% of the participants who Strong Agreed and felt that doing collaborative research will help them produce more publishable papers, with 11.11% who Strongly Disagreed and 11.11% Agreed that collaboration is a functional motivation to produce more camera-ready papers.

College research agenda

The importance of research agenda has long been recognized by academics and practitioners. In the Philippines, the Commissions on Higher Education; the regulatory body for higher education with its National Higher Education Research Agenda provides policies, directions, and priorities for research in colleges and universities. With that, each university shall develop a Research Agenda which articulates the scholarly interest (Deshpande & Webster Jr, 1989) to bring together the various functional disciplines and diverse body of knowledge into a coherent whole and ensure to focus on the key issues (Neely, Gregory & Platts, 1995). The College of Computer Science-College Research Agenda was designed to align its research priorities to the University of Makati research streams and research priority areas for funding and resource generation.

The CCS Research Agenda composed of research priority areas for the CCS Software Department and Hardware Department including the corollaries of Information Technology Service Management research areas. The research strands include the following; Algorithms, Algorithms and Computational Complexity, Animation and Digital Media, Application Development (Mobile and Web), Business Analytics and Business Intelligence, Business Process Improvement, Business Process Reengineering, Computer Aided Design, Computer Architecture, Computer, Networks and Networking Technologies, Computer Security, Data Structures and Discrete Mathematical Structures, Database Systems, Formal methods and software verification, Game Development, Information and Data Science, Information and Infrastructure Management, Information Technology Service Management, Internet of Things and Cloud Computing, Machine Learning, Management Information System, Networks and Distributed Systems Group, Operating systems, Operating Systems, Programming Languages, Scientific Computing and Technology and Entrepreneurship, Software Engineering, and Web Sciences.

College research initiatives

Based on the results of the college research capability matrix, the CCS research committee with the department heads and college dean formulated a research initiative to develop the faculty interest, provided functional motivation, and provided knowledge transition to develop their research capabilities through a series of research seminars and trainings. Table 7 provides the milestones of collaboration and research capability building initiatives of the college.

Table 7: The CCS research capability building initiatives

Milestone	CCS Research Related Activities
1	College Research Agenda Development
2	Research Seminar Series 1 Conducting Scientific and Classroom Scaffolding for Information Technology and Multidisciplinary Researches
3	Research Seminar Series 2 Emerging Research Design for Computer Science, Information Technology and Multidisciplinary Researches
4	Research Seminar Series 3 Topic: Embedding Online Tools in Writing the Literature for Review (Using Google Scholar)
5	Research Seminar Series 4 Quantitative and Qualitative Research Methodologies

Milestone	CCS Research Related Activities
6	Research Seminar Series 5
	Course Module Development, Book Authoring
7	Research Seminar Series 6
	Researches on Distributed Computing
8	Research Seminar Series 7
	ICT Research Congress (Paper Presentation)
9	Research Seminar Series 8
	Writing a Camera Ready Paper

These initiatives were conducted to provide functional motivation and technical assistance to the faculty-researchers. The initial activity was the College Research Agenda Development to align CCS research streams to the university and the emerging needs of the community, the program outcomes and faculty's scholarly interest. A seminar series was commenced with Conducting Scientific and Classroom Scaffolding for Information Technology and Multidisciplinary Researches; it presents the type of scaffolds or intervention that can be implemented in the classroom using technology, development of technologies, and utilization to optimization in the classroom. Another seminar series was conducted related to the Emerging Research Design for Computer Science, Information Technology, and Multidisciplinary Researches; this intercepts with the innovative research design and methodologies, best practices and presented the practicality and applicability of the research designs. The Embedding Online Tools in Writing the Literature for Review (Using Google Scholar) was conducted to provide technical assistance on using citation databases; ethical and other plagiarism issues in research. To assist faculty researchers in deciding an appropriate design based on the data needed, participants, and data gathering instrument, Quantitative and Qualitative Research Methodologies were provided. Some of the CCS courses require technical course module, a Course Module Development and Book Authoring were provided also. Researches on Distributed Computing, ICT Research Congress (Paper Presentation), and Writing a Camera-Ready Paper were planned thereafter to let the researchers inform the readers and audience, elicit and elaborate the result of their study through research poster, paper presentation and publication.

CONCLUSION AND RECOMMENDATIONS

Based on the Research Capability Matrix and Data Analysis, results showed that the professional and academic communities need careful and extensive research support for knowledge generation, resource allocation, and networking, for which funding and research dissemination must be provided. Therefore, the university and college administrator must provide research programs which are within the college and university research agenda and that further support to its faculty must be established. A College Research Manual is recommended and that further studies on the effectiveness of the program must be conducted. The results of this study will be used as a basis for policies redirection on the Research and Development Program. Further studies could be done which draw a management theory linked to faculty changes in beliefs, attitudes and values in bringing about a change in research culture.

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— This article does not have any appendix. —