'Digital garamut[1]' and women in Papua New Guinea: Women's empowerment through education and ICT in the PNG context

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Abstract

The paper reports and discusses a qualitative study that explored how lecturers at higher education institutions (HEIs) in Papua New Guinea perceive the role of education and ICT in women's empowerment. The data was collected by interviewing twenty three faculty members in six institutions of higher education. Higher education institutions in PNG are distinctive places where ICT and its global impact, traditional cultures and postcolonial heritage create together unique environment in which the PNG women's identity is renegotiated. The paper argues that ICT through higher education has the potential to empower PNG women. Women's traditional subordination to men affects the higher education environment, and such subordination is found to be socially acceptable despite existing government equality policy. In addition, technology as a communication tool has freed women and extended their means of communication, making women not only recipients of communication originated by men but originators of communication as well. Social constructivism, feminism, and postcolonialism illuminated different aspects and contributed to the understanding of issues involved in gendered interaction of tertiary staff and students with technology and the adaptation of technology within the context of postcolonial education.

Keywords: gender; education; ICT; women's empowerment; developing country.

Papua New Guinea and its cultural and social context

Papua New Guinea is one of the largest island nations in the South Pacific with a total land area of 462,840 square kilometers. It is also one of the most diverse countries in the world – geographically, biologically, linguistically, and culturally. The nation gained its independence from Australia in 1975. Along with the largest islandland mass, PNG has the largest population of the Pacific Island countries with an estimated population of 6.9 million (World Bank, 2011). It has grown rapidly since independence and continues to grow at an average rate of 2.7% per annum (Asian Development Bank, 2011). Approximately half of the population is under 19 years of age (EU, 2004).

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[1]Garamut (TokPisin) – Slit wooden drum used for communication and music

Papua New Guinea has many paradoxes. By world standards, it is a potentiallyrich nation with abundant natural resources, and its population is still reasonably small relative to its land area and potential growth (McMurray, 2002). When compared with its Pacific Islands neighbors for many indicators of well-being, however, the country performs very poorly. According to the United Nations Development Program's (UNDP) Human Development Index (HDI), PNG ranked 152 of 187 countries globally (UNESCO Institute for Statistics, 2011) and the absolute lowest in the Pacific Region (Pacific Islands Forum Secretariat, 2010). Life expectancy is also the lowest in the Pacific. The adult literacy rates vary throughout the country, being considerably lower in the Highlands provinces. The literacy rate is low (56.2%) with a noticeably lower rate for females (51%) than for males (61%) (Asian Development Bank, 2006). Thirty per cent of children never enroll in school, and of the children who enter primary education, the attrition rate before reaching grade six is in the vicinity of 50% (Feeny, 2003).

Research design synopsis

The study was led by the main research question: 'Does ICT through higher education contribute to women's empowerment in PNG society'? The research design was developed within constructivist epistemology. Social constructivism, feminism, and postcolonialism illuminated different aspects and contributed to the understanding of issues involved in gendered interaction of tertiary staff and students with technology and the adaptation of technology within the context of postcolonial education.

The selection of qualitative methodology was guided by number of considerations. The study undertook a challenge to explore the meaning of education and ICT for empowering of women in the rich context of PNG culture. It attempted "to make sense of, or interpret, phenomena in terms of the meaning people bring to them" (Denzin & Lincoln, 2008, p. 4). The focus on meaning which people pertain to phenomena and concern to uncover it in the research process remains at the foundation of qualitative paradigm(Denzin, Lincoln, & Giardina, 2006; Guest, Namey, & Mitchell, 2013; Snape & Spencer, 2003).

A qualitative paradigm adopted for the study provided a venue for an in-depth investigation of the issue of women's empowerment through education and ICT. Twenty threefemale and male academic staff from three universities (Pacific Adventist University in Port Moresby, University of Goroka, and Divine Word University in Madang) and three other institutions of higher education (Madang Teachers College, Holy Trinity Teachers College in Mt. Hagen and Technological Institute in Port Moresby) took part in the study. The inclusion of male participants was considered appropriate given the complexity of PNG culture and traditional women's subordination.As observed by Peters, Jackson and Rudge(2008), men are not only an important part of women's lives but "men can be advocates for women within men's conversations" (p. 378). Convenient purposive sampling was a technique in the selection of participants.

The data werecollected through semi-structured interviews. The qualitative research interview is often the sole data source for qualitative research project (DiCicco-Bloom & Crabtree, 2006), as it was in the case of this study. Semi-structured interviews provided data constructed on the meanings that life experiences hold for the interviewees. The method also offered participants a venue where their voices were heard and helped them to uncover unrecognized feelings and attitudes (Marvasti, 2004).

The interview questions looked for the information regarding the interviewees' personal experience of using computers and how they saw the role that computers play in their professional career. The questions also sought insights on how computers fit into the matrix of traditional beliefs and values and how ICT influenced participants' everyday activities.

"Transcendental realism", the Milles and Huberman's(1994) framework for qualitative data analysis, has been adopted for the purpose of this study. With the assumption of knowledge being a social and historical product, Milles and Huberman's data analysis framework aims to account for events rather than simply to

document their sequence with the purpose of revealing individual or social processes and mechanisms at the core of events and exploring relationships among social phenomena. Thematic networks were employed as an analytical tool to analyse textual data.

Women's empowerment through education and ICT

Feminist ideas have been present in the academic environment for more than a century, shaping its intellectual and social landscape. Since the time of Elizabeth Cady Stanton[2], who "asserted that women must be given equal opportunities to those of men if they were to achieve their greatest potential" (Ropers-Huilman, 2002, p. 109) and who attempted "to pry open the doors of education for women" (p. 109), women within and outside of academia have emphasized the importance of education for women's personal development and full social participation. Feminists attempted to influence the higher education environment on a number of levels: from ensuring women's full access to all positions in higher education as students, faculty members, or administrators, to securing proportionality in highly paid and prestigious positions in academia. Feminists also drew attention to other issues affecting women's professional performance, such as "'women's ways of knowing', the need to balance work and family issues, sexual harassment, and the gender gap in higher education leadership" (p. 110).

Feminist activism in higher education intensified with the beginning of the second wave of feminism in the 1960s and 1970s, resulting in increased numbers of women participating at the tertiary level as students, faculty members, and administrators and resulting in the establishment of women's studies as a discipline. Writing about feminism in US higher education, Marine (2011) argued that "women have mobilized to draw attention to many diverse aspects of feminist struggle, such as creating responses to sexual violence, breaking silence on issues of gendered inequality, and instituting affirmative action in hiring and admissions" (p. 15).

To respond to the growing importance of ICT in private and social life, feminists joined the academic discourse and contributed to the field, especially with their discussion on the social construction of technology (Henwood & Wyatt, 2000; Klein & Kleinman, 2002; Landstrom, 2007; Wajcman, 2000) and technofeminism(Lagesen, 2008; Wajcman, 2004). When discussing technology within the higher education landscape, feminists focus mainly on the unequal participation of women in information technology studies (Clegg & Trayhurn, 2000; Lagesen, 2008; Mellstrom, 2009; Randall, Reichgelt, & Price, 2002). This paper contributes to the discussion about women in academia in a developing country with a special focus on empowering women through education and ICT. The following themes evolved at the nexus of the wider context, research findings, and theoretical framework and are presented here: women's subjectivity in postcolonial education; empowerment of women through education; and ICT for empowering women in the knowledge society.

Women's subjectivity in PNG postcolonial education

Women's traditional subordination was the reappearing theme in this research in the discussion of gender issues in the context of technology access and application in IHEs. Female students at all tertiary institutions and female staff at OIHEs felt women's daily struggle was unjust, although it was generallyseen as socially acceptable, as observed by onemale participant:

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[2]Elizabeth Cady Stanton (1815 – 1902) was the best known and most conspicuous advocate of women's rights in the 19th century. Her Declarations of Sentiments, presented at the first women's rights convention in 1984, provided a base for the first women's movement she led in the United States (Griffith, 1984).

> Papua New Guinea is a male dominated society. And every male seems to think and believe that they own everything and they have the right to do everything first then the female. (…) That has to do with cultural influence. So, men first, ladies last. It is cultural influence; we can't help it (UM11).

Unequal access to computers was taken as a natural part of Papua New Guinea's male-dominated society. The reification of the image of subordinated women – the gendered Other – "tends to project the unequal state of affairs to the public as if it were permanent, natural and outside of time" (Fox, 1999, p. 34).

Women's subordination in access to computers exemplifies the gender divide in the educational sector, which reflects social stratification and re-strengthens the gender divide. Social and cultural customs have been influencing gender differences in educational opportunities in colonial and postcolonial Papua New Guinea (Sukthankar, n.d.). Here, female participation rates in all levels of education remain one of the lowest in the world, reinforcing that "women's access to and participation in formal education is an overwhelming image of women as subordinate, dominated by men in society" (Fox, 1999, p. 33).

Traditional women's subjectivity reinforced disparities between genders and was reflected in the education during pre-contact and during colonial times. Establishing tertiary education in the 1960s did not significantly improve women's educational opportunities. Although they were allowed to enroll, women constituted only 10% of the student body at the University of Papua New Guinea in Port Moresby in the 1970s and were facing many difficulties. In his summary of women's rights in the first two decades of tertiary education in Papua New Guinea, Howie-Willis (1980) concluded:

> Traditional patriarchal beliefs about masculinity and femininity and the properness of dominant male and submissive female roles seemed deeply ingrained in the minds of the Papua New Guinean men now in control of modern institutions like the University. (…) And so the prospects for UPNG women, students and staff alike, remained daunting. Having become convinced of their grievances, the women in Papua New Guinea's universities were unlikely to give up the struggle. (p. 264)

More than three decades after Howie-Willis's observation, his assertion seems prophetic. Although more women are enrolled at the tertiary level, cultural implications prevail and continue to determine women's subordinate status in the society as well as in the educational landscape. Economic development of the country in the 1990s enabled more people, including women, to enter the education system. "However, the picture for the majority has not improved, and one of the greatest sources of inequality is an increasing differentiation of power and wealth between men and women. By international standards, including less developed countries (LDC), UNDP data show that participation rates for women in Papua New Guinea are among the worst in the world" (Fox, 1999, p. 34). According to the 2011 UN Human Development Report, Papua New Guinea's human development index (HDI)was 0.466, positioning the country at 153 of 187 countries and territories worldwide. In the Gender Inequality Index (GII),Papua New Guinea had a value of 0.674, ranking it 140 of 146 countries in the 2011 index. Only one woman, a nationalized expatriate, held a parliamentary seat in 2011 (0.9%), and 12.4% of adult women reached secondary or tertiary education compared with 24.4% of their male counterparts (UNESCO Institute for Statistics, 2011). The political and social landscape favors men. Government bureaucracies are male dominated, and "legal institutions reflect their colonial origins, reinforcing a sex/gender hierarchy in which women's lives are subsumed in the categories of 'custom' and 'tradition'" (Macintyre, 2000, p. 146).

Male domination in different aspects of social life, especially in more seniorpositions in work places, is seen as a consequence of women being disadvantaged in educational opportunities, as one female participant observed:

> From the time when PNG was introduced to this education thing, men were given the priority before and got into this; probably women, we underestimated ourselves that we could not get into the top course and we left a vacancy for men to get in and it is how we have more men in a top post

job.…Man is a boss.…Priorities in the workplace are for men first then women.…When you request for something, it is like, it's not important for you, you can do without it (OF05).

Male domination in society continues to be reflected in contemporary higher education. Male aggression demonstrated in gainingaccess to computers, as revealed in this study is a sign of women's subordination. Male aggression towards women being part of thealmost daily experience for PNG women has been confirmed by a number of current studies exploring gender relations. Sai (2007) observed that male aggression "is seen in some PNG societies as a masculine characteristic and identity" (p. 287).

One male participant in the presentresearch shared:

PNG is male dominated society. And every male seem to believe, that they own everything, and they have right to do everything first then the female.… It is cultural influence; we can't help it (UM11).

In the same vein, one of the participants in Sai's research (2007), a community development officer, shared with her:

Generally, men see women as lower than them, and this is men across board. (...) It is everywhere – government, in the village, in institutions of learning, in NGOs, everywhere. Now you don't see women in executive positions, I mean there are, but much fewer that it's supposed to be.That's an indication of where men like women to be. (p. 264)

Although colonial and postcolonial education maintained the social stratification of traditional society and male domination, higher education and ICT have the potential for women's empowerment, as discussed in the following sections.

Empowering PNG women through higher education

"They see me as a woman of status because of my education" (UF01). Indeed, education is the key to successful advancement in contemporary society for all, especially those who traditionally were disadvantaged, like women. Without education, the progress of social change will not be possible. Although one female participant shared:

They [women] are still submissive because they are educated only up to grade 10 level. They don't go other than that. That is why their level of thinking is still very much like other women at home (UF20).

This female lecturer (UF20) was optimistic about a new trend she observed when on holiday in her home village. She noticed that more girls are being given opportunities for education; fathers have started to realize that educating daughters could be a better investment for their own future, and thus they are sending girls to school. The female participant concluded that "we are hoping that this investment would eventually change the women's way of thinking towards the community, how we always lived" (UF20). Her observation remains in line with Sukthandkar's (1999) recommendation in the context of mathematical education in Papua New Guinea: "It should be evident that any attempt to improve the quality of women's education must first and foremost focus on changing the society's attitudes towards women. These social attitudes which perceive women as inferior beings have, as already noted, been institutionalized by the society within its educational system" (p. 137). Rooted in traditional practices and reinforced by colonial practices and negligence towards women's education, the cultural attitude favoring men in education is slowly changing.

Female and male participants in the research called for more awareness and encouragement for female students to progress in their education and consequently in their professional career. They saw it as opportunity for women's empowerment.

> I think we need to educate, to give more awareness to ladies that we are equal participants.…We can have more female students with computer technology professionals and other jobs dominated by males (OM18).

> The number of female students we send out to the workforce will also influence the workplace…. It puts them at position to move on and to succeed and achieve more things (UF13).

Attitudes towards promoting women's advancement in the educational sector were also discussed by Sai (2007). She revealed opinions of modern educated male Papua New Guineans. Sai asserted that "men working in the field of education argue that they encourage female students to progress and to reach their potential in their field by generating a gender-conscious perspective in curricula, and in revising and producing policy aimed at promoting both gender balance, and equal participation" (p. 274). The future of Papua New Guinea lies with the education of girls, as one of Sai's respondents, a male academic, summarized:

> It's my firm belief that, if we educate girls and give them the opportunity to be educated, I think it contributes to the development of women. If we don't develop women, they can't bring any development to Papua New Guinea. We have to have educated men and women to stand side by side to realize the full progress of this country. Otherwise we'll have an illiterate population; we'll still have corruption; we'll still have the problems we are having now. I don't see we can get over that without educating both men and women. (p. 277)

Women's empowerment may be realized in many different forms. One of the signs of women's empowerment is their gaining financial independence from a husband or clan members. Writing of a women's project on Lihir Island, Macintyre (2003) described the changing situation of young women: those with "secondary education and ambition were eager to work for wages and to take up offer of training. This option guaranteed income, meant that they felt part of the development project, and gave them opportunities to gain economic independence" (p. 125). Because the research focused on both ICT and higher education, the possibility of gaining a well-paid job as a result of education was discussed in the context of gainingcomputer skills. Education and computer skills were seen as desirable for professional advancement.

The experiences of women in other countries support the argument that education benefits women and empowers them within society. Aslam, Kindgon, and Soderbom(2008) found that more educated women in Pakistan were more likely to get wage employment with higher earnings. They established that "education does increase gender equality in labor market outcomes, through both improved occupational attainment of women and reduced gender gaps in earnings in any given occupation" (p. 87). Amir-Ebrahimi(2008), who investigated the use of cyberspace for Iranian women's empowerment, observed that access to better education allowed women to enter a public sphere where they become active in government administration, public and private organizations and NGOs. With women's increasing presence in universities and in public forums, "they gradually become active agents of social change, generating important challenges regarding the status and rights of women under Islamic law in the private and the public spheres" (p. 91).

Although the presence of women in PNG contemporary higher education is gaining in importance and recognition, it is not yet at an optimumlevel. Writing about women's leadership in IHEs, Vali(2010) discussed numerous challenges faced by female academics: the predominately masculine organizational ethos of a university, biased appointment processes and discrimination, and the lack of support systems in terms of mentoring and networking among women and for women. Educated women are often subjected to additional pressures. In her writing about educated women in Papua New Guinea, Spark (2011) observed that "because being educated reflects a deviation from prevailing sociocultural norms about gender, these women's status as tertiary-educated, makes them, in some ways, particularly vulnerable" (p. 3). It is a situation often found in societies "where the status of women is in a state of transition" (p. 3). Many

contemporary PNG men still seem to have reservations about the empowerment of educated women and see them as too modern and representing "all that is wrong with contemporary Papua New Guinea society" (p. 5). In the same vein, Fox (2007) affirmed that for many men, the subordination of women is "a time-honored cultural factor in Papua New Guinea society (...) any transformation of the role and status of women in society was a Western imposition of their concept of equity and equality, which went against traditional culture" (p. 122).

PNG women in traditional society

It is beyond the scope of this paper to provide a comprehensive narrative of traditional women's status in PNG society, particularly considering the presence of vast cultural diversity. Although PNG has patrilineal and matrilineal affiliations, with consequences especially for land tenure, females and males have considered society as male dominated. Participants shared perceptions of female roles as raising children and performing household duties.

> Computers, all the information (...) maybe women are ignorant. They don't know. Because in PNG traditional society, women just got married and raise kids (OM17/M[3]).

The above perception was given by a male academic originating from a matrilineal society. The common understanding that matrilineal systems put a woman in the centre of social life is somewhat disprovedby the limited roles as seen and expressed by OM17/M. However, it remains in accordance with assumptions underlying the "Matrilineal Puzzle"[4] that "1 Women are always controlled by men; 2 Male roles are structurally central in all social systems; 3 The roles of fathers and husbands are the most important social roles of men, these being transferred in matrilineal systems to the maternal uncle and brother, who take over the paternal and partnership functions" (Watson-Franke, 1992, p. 476). Although in some PNG matrilineal societies "women's economic contributions were substantial"(Macintyre, 2003, p. 120), their political status was not, with men taking up a role of decision-making. Thus, generally the situation of women in both matrilineal and patrilineal societies has many commonalities: they are expected to do all household chores and take care of children.

> Women do almost everything. They work, apart from bearing children, they work very hard; they are more like slaves to their husbands. Women becoming too submissive to their husband. They think that man says they must do. If they don't do, they even got bitten or they even got killed. (...) If men gathered for a certain meeting and men said no women are supposed to come, no women would go for that meeting because they need to listen to men. (...) And most of meetings it involves only men and decision making is entire men (...) it is men who are doing the decision making. As women, we are very submissive to our fathers, brothers, and other men and because we have grown up in that kind of society, coming to school, we become very submissive to men around us. So, in terms of having a say over a decision, women have no say at all in the society. Decisions are made by men and that's it (UF20/P).

Women are expected to remain submissive to men and in consequence act as servants for men. Their status in society is considered to be very low.

> Even though we have education system, even if a woman is educated, that woman will still be very submissive to a husband or to a father or to brothers. Because it is expected of the culture that she needs to be submissive (UF20/P).

> Women are regarded as no body or we can say low class people. They will only submit to their husband. The husband is in charge, so they never have the upper hand. Like some of the

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[3] For a better understanding of the issues presented, in this section information regarding participants includes t heir clan affiliation: M for Matrilineal; P for Patrilineal.

[4] A term introduced by A. Richards (1950) to express the confusion over male roles in matrilineal kinship.

> responsibilities that are played by men, the ladies will not be, they do not have a right, they are not given the privilege to be in charge or take responsibility of some of the duties that are supposed to be done by men. So generally, the understanding is still there, the men or the husbands, they are the bosses. That's the general understanding. It is still there these days (OM18/P).

As noted earlier, education is one of the sectors where women's inferiority is clearly manifested. From the very beginning of Western-type education system in Papua New Guinea, boys were given priority in terms of schooling. Parents preferred to educate their sons expecting higher financial returns upon the son's completion of formal education. Furthermore, additional custom-related perspectives lowered girls' chance for education: "the family labour requirements, marriage, and pre-marriage arrangements were more important" (Fox, 1999, p. 36) than sending a daughter to school.

> Really, when from the time when PNG was introduced to all this education thing, men were given the priority before the girls into this and probably women, we underestimated ourselves that we could not get into the top courses (OF05/P).

In one aspect, the situation seems to improve for girls when their parents realise the value of girls' education and seeing it as a future investment.

> The trend is changing a little bit that fathers beginning to see that educating a daughter is much more important than their sons because sons are turning to be very mischievous than daughter. So, they are kind of seem to be a little bit liking having to educate women because, you know… Others turn to realize that women or girls turn to take care of them later on in the future other than their sons. So, they are trying to invest a lot in their daughters now (UF20/P).

However, other strong traditional implications governing female-male relationships in society still pertain in educational environments. On the one hand, underlying kinship morality holds that all kinsmen should be loyal to one another. On the other hand, the big-man leadership model (there is no big-woman leadership model) and traditional male domination in society reflect the reality of women's subordination to men(Chao, 1984; McElhanon & Whiteman, 1984). This has strong implications in higher education settings. As discussed earlier, women were obliged to give men first access to computers. The traditional role of being a family provider limited women's time for using computers. While men access the Internet or use computers, women spend the majority of their time taking care of family, including extended relatives. Furthermore, as shared by number of participants, women were obliged to do typing for male clan members.

The issue of women doing typing for men appeared to be fairly common. When discussing women's use of computers, typing was characterised as a typical task for females.

> You will find that it's ladies who majority are better users of computers because of their actual roles back in the workplace. They are usually ones that typing reports on behalf of their male colleagues. (…) Because most of the ladies are very good typists, men kind of dump all the work on to them. (…) Because of that shift from typewriter, it was always seen as a women role, secretary using the typewriter, and so men always said, you women, you do the typing (UF12/M).

One of the reasons for such categorisation is the traditionally uneven educational opportunities for womencompared withmen. Men generally have better education and hold more seniorpositions in workplaces. Women generally receive a lower level of education, are destined to marry at a young age, and hold lower positions in workplaces. However, as education is a source of discrimination in society, women who achieve the same education as men may have opportunities for advancement.

> They [parents] are trying to invest a lot in their daughter's education now. And we are hoping that this investment would eventually change the women's way of thinking towards the community, how we always lived (UF20/P).

ICT for empowering women in the knowledge society

Hafkin and Huyer (2006) discussed two distinct groups of women in contemporary society: "Cinderellas" are women mainly in the developing world with no or little access to education and ICT, who remain in the "basement of the knowledge society" (p. 1), and "Cyberellas", who are well educated, fluent in computer applications and different usages, and fully participating in the benefits offered by technology in the knowledge society. Their book *Cinderella or Cyberella? Empowering women in the knowledge society* questions and attempts to answer how Cinderellas could become Cyberellas.

The majority of women in Papua New Guinea remain in the Cinderella category. Their access to education is restricted by socio-cultural norms. Those who achieve higher education still struggle to overcome gender-related burdens. As discussed earlier, women participating in this research pointed to their disadvantaged situation in relation to access to technology: male colleagues exercised their superiority and claimed the right to have first access to available computers and the Internet; female's traditional family obligations impeded availability of their time for computer use; the lack of security on university campuses restricted women's movements in the evening hours. However, women were determined to take advantage of opportunities given to them.

In this research ICT was seen by participants as a tool for women's empowerment at different levels: women with computer skills might find it easier to find a well-paid job and thus ICT has the potential to assist women in their role as a family provider; educated, technology-shrewd women may find it easier to raise their status in society; technology might also be used to facilitate women's empowerment by promoting successful women's role models. The contribution of ICT in women's empowerment as revealed in this study confirms findings of similar studies in other parts of the world. In their analyses of technology and women's advancement in Latin America countries, Garido and Roman (2006) identified a number of contributions of ICT to the process: ICT renews women's self-esteem and self-confidence that they can change their lives; it provides venues for women's collaboration; it improves women's competitiveness in job markets and creates new entrepreneurial opportunities; and ICT opens opportunities for women's participation in national and international networks contributing to policy-making processes.

One of the important means of women's empowerment in feminist scholarship is the use of ICT, especially the Internet, for social activism. The notion that cyberspace provides a platform where women from all walksof life may come together to create a new society without patriarchy emerged into cyber feminism. Wajcman (2004) explained, "Web-based technology generates zones of unlimited freedom", that cyber feminism translates into "liberation of women" (p. 63). Cyberspace is a reality "where gender inequality, like gravity, is suspended" (p. 66). Youngs (2004) identified two major themes in feminist analysis of the Internet as a platform where traditional patriarchal boundaries defining unequal social relations of power are disrupted: at the boundary between private and public spheres, and at the boundary between national and international spheres. Both types of these traditional boundaries were identified in the research in relation to life and professional careers of PNG women. Traditionally, a woman's identity was defined in relation to her private life as a wife and mother, while a man's identity was defined by his relation to the public. Notwithstanding that women enter the public sphere by getting education and jobs, for the majority of them their traditional roles take precedence over professional duties; social expectations remain unchanged.

In relation to the second type of boundary – between national and international spheres – Youngs observed that "women suffered from a double domestication.If they have been unequally present in or absent from the political and economic spheres of decision-making and influence in national settings, they have been even more unequally present in or absent from those realms in international settings. International relations has been, and in many senses remains, a bastion of masculinist principles and influence" (p. 189).

PNG women share the disadvantaged situation of women worldwide. For years, they have been absent from the political scene and unheard in policy-making processes.

In the background of such a setting, Youngs claimed that the Internet provides a platform where the transgressive potential of the cyberspace "has implications for women's capacities both to relate to one another, and to make political, economic, and cultural contributions to their own and other societies, and to local, national, and international issues and processes, as individuals or collectively" (p. 189). Women participating in this study were fascinated with the potential of the Internet in terms of connectivity and closeness: the Internet has the potential to connect them with other women around the world: they saw the Internet as a way to learn about other women, their lives in other parts of the world, to be inspired by them but also to share their own stories. Despite, asnoted earlier, numerous limitations in access to and use of the Internet, women felt that, when circumstances might be more permissible, the Internet could provide a platform where women can express themselves and contribute more meaningfully to social processes on national and international levels. The enabling power of the Internet in women's empowerment was shared also by Nath(2006) in her debate on empowerment of women through ICT-enabled networks which is understood "as the use of ICTs by or for women to develop further their skills and abilities to gain insight about actions and issues that affect them (...), as well as to build their capacity to be involved with, voice their concerns about, and make informed decisions on these issues" (p. 192).

Digital garamut and PNG women

Communication structures and media have had their place in PNG society for thousands of years. They were designed "to serve the internal needs of the small tribal states and their encounters with neighbouring tribes. Their sources used were first and foremost the human body but also instruments or media constructed from natural materials in the environment" (Gemo, 1994, p. 38) – like the garamut, kundu, the conch shell, and other artefacts.

Similar to other communication devices, the garamut has been used traditionally for two purposes: communication and music. "In communication, very distinctive rhythmic codes which may represent a person, a clan, a location, length of time, or a multitude of other keywords for specific purposes, are used. Each purpose has its own set of keywords and rhythms" (Pongiura, 1995, p. 111). Interestingly, people are able to tell a story using a garamut and a system of codes and rhythm. "It would be like a normal face-to-face conversation" (p. 111).

Communication has been mediated with the use of communication media in Western as well as PNG societies for centuries. Contemporary technology has been affecting and transforming communication worldwide. What distinguishes the meaning of the PNG-specific construct of technology as a communication tool from other parts of the world is the women-liberating effect of technology in the PNG context. In Western societies, women were not specifically excluded from access and usage of communication devices. The men were more likely to be first to have access to technology and to use it more than women; however, women were not restricted from access and usage if they could afford it. In Papua New Guinea, traditional communication media were used only by men. "Children and women were not allowed to drum. Informally men individually beat drums for pleasure. On formal occasions, men drummed in groups to accompany singsings [cultural performances] or during secret rituals in men's houses" (Lohman, 2007, p. 91). While traditional garamut was beaten only by men, the contemporary digital garamut is available to women as well. Technology as a communication tool freed women and extended their means of communication, making women not only recipients of communication originated by men but originators of communication as well.

Summary

The paper has argued that in a developing country like Papua New Guinea, ICT and higher education have the potential to empower women. Women's traditional subordination to men remains reflected in the higher education environment and despite existing government equality policy it remainssocially acceptable. Nevertheless, PNG women perceive ICT as a vehicle of change – in conjunction with education ICT holds the potential for women's empowerment at different levels: it supports a woman as a family provider; it supports raising women's status; and it facilitates awareness about women's empowerment. Traditionally identified by their domestic roles, women with enhanced technological skills are more competitive in a better–paid job market and thus are assisted in fulfilling family obligations. Given that leadership models in Papua New Guinea are more meritocratic than hereditary, someone might gain in status once he or she meets the qualities expected by a community. Although traditionally there is no a big-women model, and contemporary PNG society remains male-dominated, if a community appreciates a woman's merits, it elevates her status. In this respect, ICT play a significant role in helping women not only to provide for their families, but also to become respected members of their communities.

The paper reported that participants of the study saw the role of technology in their awareness of women's empowerment at two levels: personal and professional. At the personal level, ICT assisted women in strengthening their self-esteem and self-awareness. ICT provided a platform where women found new ideas for their private and professional lives. In the social context, ICT assisted women in learning about the outside world and assisted those who aspire to play an active role in social and political life.

In addition, the paper has also observed that technology as a communication tool has freed women and extended their means of communication, making women not only recipients of communication originated by men but originators of communication as well.

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