academicJournals

Vol.9(11), pp. 157-165, November 2017
DOI: 10.5897/IJSA2016.0726
Article Number: A1F864B66512
ISSN 2006- 988x

http://www.academicjournals.org/IJSA

International Journal of Sociology and Anthropology

Full Length Research Paper

Women's perception on technology in relation to enhancing their productivity: The case of Southern Nations, Nationalities and People's Region (SNNPR), Ethiopia

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Received 26 April, 2017; Accepted 22 June, 2017

The aim of this study was to investigate the perception of women in the Southern Nations, Nationalities and People's Region (SNNPR), Ethiopia on using modern technology to enhance their productivity. To achieve this goal, survey design with quantitative method was employed. The primary source of the data was household women. They were selected by using stratified sampling. The data gathering tools were questionnaires, focus group discussions, and interviews. The collected data were analyzed using descriptive and inferential statistics. The results showed that 73.2% of the study participants have been using modern technology in their day-to-day life. Additionally, over half of the women indicated that using modern technology has saved their time, increased their income from agriculture, and helped them to live a better life. However, 80% of respondents in Gamo Gofa and 76% in Bench Maji believed that modern technology had no effect in reducing environmental impact. 47.6% of the respondents believed that modern technology reduced cost. In Sidama and Silte zones, 74.5 and 74.88% respectively, of the study participants recognized as modern technology have brought change in their life. 61.83% believed that leading a better life as a result of using modern technology. On the other hand, in Basketo and Semenomo, 68 and 70% of women respectively had negative attitudes towards modern technology in saving their time. In Bench Maji zone, 77% of the respondents believed that modern technology never increased their income. Finally, to improve the existing negative perception of women towards modern technology in some areas of the region, feasible recommendations are made by showing directions to different stakeholders on how to solve the identified shortcomings.

Key words: Women, agriculture, perception, modern technology.

INTRODUCTION

Modern technology plays a great role in reducing the burden on women, especially in developing countries such as Ethiopia. Technology helps Ethiopian women to maximize their productivity and changes their ways of life.

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Nowadays, technology is used everywhere in the world, and is an integral part of people's lives.

Access to technology can affect the lives of both women and men living all over the world. Its accessibility differs from one continent to another, as well as from rural to urban areas. People who live in developed countries have better access to technology than people living in developing countries (Beliak, 2013).

According to Gill et al. (2010), technology is an engine for economic growth. Therefore, introducing modern technology in the country in general, and in the SNNPR in particular, empowers women and improves efficiency of their work, and thereby increases women's productivity. Gill et al. (2010) stated that women's improved economic status produces many positive economic and welfare outcomes for their children, families, and societies. Furthermore, he explained that women accessing similar resources as men such as the ability to have income, technology, and paid work improves not only their children's wellbeing, but also the overall life of their families. According to Gena ARDIS (2010), governments in developing countries give more attention to urban than rural areas in introducing modern technologies, largely due to their low income levels and dispersed settlement of the people.

Accordingly, efforts to build new technological infrastructure and offer proper trainings are focused in urban areas. Men and women use technology in different ways during their daily activities. Hence, lack of access to modern technology affects women to a higher degree than men. As Gargallo et al. (2010) stated, "evidence shows that men tend to be the first to use new technologies and to use them more, whereas women are underrepresented." The majorities of rural women in developing countries are deprived of modern technology, and rather depend on traditional energy sources (Victoria and Aguilar, 2012).

In Sub-Saharan African countries, there are numerous factors that can affect the adaptation of modern technologies. According to Meinzen-Dick et al. (2004), assets, vulnerability and institutions are the main factors that can affect technology adoption in Sub-Saharan Africa. Accordingly, all the above-mentioned factors could affect the perception of Ethiopian women on modern technology.

In Ethiopia, most women have not benefited from modern technology. Berhanu (2003) stated that in Ethiopia, majority of the populations are not using modern technology rather implements product of traditional knowledge. Women are not given an equal opportunity to be productive and care for her family in the villages. Rather, they were engaged in traditional ways of food processing.

In the SNNPR region, the government has attempted to introduce technology through the women development and change package (2002 to 2007). One of the focus areas in this project is the empowerment of women to use technology for sustainable development (SNNPRG BoWYCA, 2013).

According to Okafor (2002), women across the developing world are denied equal access to land, technology, and credit potential. Ethiopian women who are living in rural area are most likely engaged in agricultural activity. Most of them are working their agricultural activities manually.

However, they are the backbone of economic development and poverty reduction. Thus studying their perception on modern technology will have impact on creating awareness as well enhancing their productivity. Therefore, the intention of this study is assessing how technology is used by women in the study area and their perception on how technologies enhance their productivity.

Research questions

This study attempts to address the following research questions:

1. What are the technologies that women use in the Southern Nations, Nationalities and People's Region (SNNPR)?
2. What is the perception of women in the SNNPR towards modern technology (like modern tiller, biogas, chicken cage, honey hives, solar energy light, tractor)?

Objectives of the study

The southern Nation Nationalities and Peoples Region (SNNPR), one of the nine states making the federal government of Ethiopia is located in the southern part of the country. It is the third largest state of the Federal Democratic Ethiopia. It has an area of 113,539 square kilometers and shares boundary with the Oromia region in the north and northwest, east and southeast. Administratively, the region is divided into 14 zones, one city administration and four special *woredas*/districts, viz. Bench-Maji, Dawro, Keffa, Gamo-Gofa, Gedeo, Gurage, Hadiya, Kembata-Tembaro, Segen Akababi Hezeboch, Sheka, Sidama, Silte, and Woliyta zones and Basketo, Konta, Halaba & Yem Special Woredas, Hawassa City Administration.

The region is a multination which consists of about 56 ethnic groups with their own distinct geographical location, language, cultures, and social identities living together. According to the 2007 Population and House Census (CSA, 2007), women accounts for about 50.48% of the region's population (UNFPA, 2008). Since 2004, the regional government, has adopted what is known as "women development and change package" that aims to

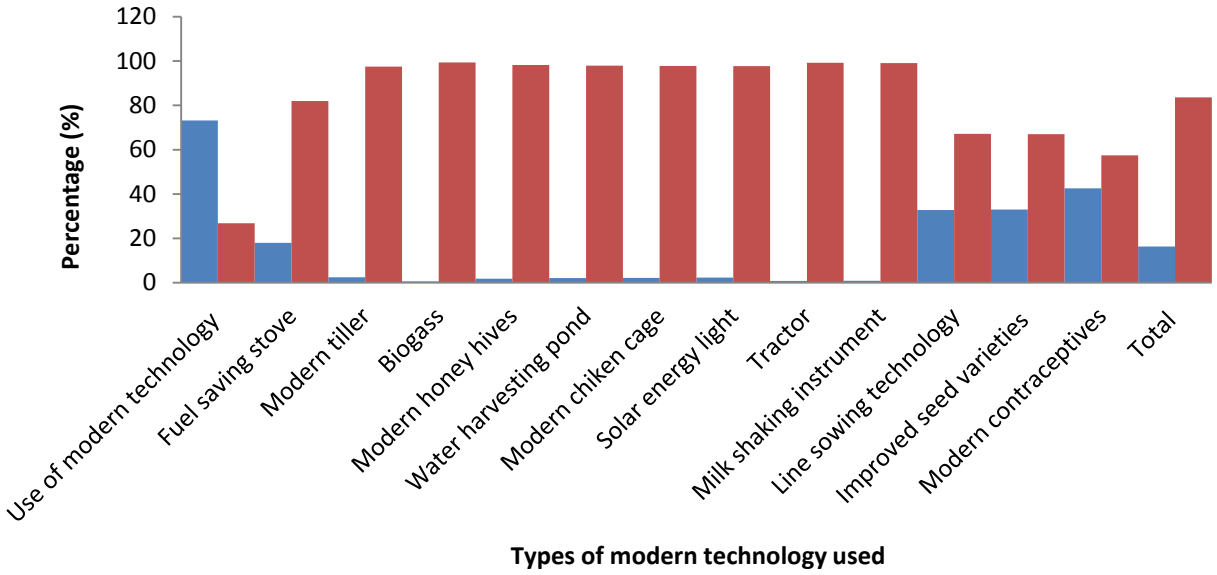

Figure 1. Modern technologies used by the study participants in their daily life.

encourage the inclusion of women as the beneficiaries of the ongoing development efforts by the government. Various development packages that aimed at benefiting women have been implemented by different sectors in the area including, but not limited to, education, health, microfinance, trade and industry, agriculture and technology scaling up.

Therefore, the study was conducted on representative sample of randomly selected *Woredas* in all Zones and special *Woredas* of SNNPRS to investigate the perception of women to achieve the following objectives. The main objective of this study was to assess the perception of women regarding modern technology in relation to enhancing their productivity. The specific objectives of this study are:

1. To identify the technologies used by women in the SNNPR, and
2. To investigate the perception of women in the SNNPR towards modern technology.

METHODOLOGY

This study used survey design with quantitative method to explore the perceptions, attitudes and beliefs of the respondents about modern technology usage, because as sighted by Creswell (2014) survey method is more preferable because it provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population.

Sources of data

The main data for this study were generated from primary source. The bulk of the data for the study were generated through household survey questionnaire. Primary data source was obtained from household survey in sample area of different zones in the region using multistage sampling techniques. 604 households were selected from each zone (18 zones and 2 special woredas/districts), and therefore, a total of 12,080 were selected in the region by using the Cochran (1977) sample size determination. Of which questionnaire was distributed to 11,162 households.

RESULTS AND DISCUSSION

Modern technology used by women in the study area

In SNNPR, most women who are living in the rural area have limited access to technology. Even the technologies they are using are not that much advanced. Some of the modern technologies they are using in their day to day life are fuel saving stove, tiller, biogas, honey hives, water harvesting pond, chicken cage, solar energy light, tractor, milk shaking instrument, line sowing and improved seed variety.

Figure 1 shows that out of the total respondents, 73% (8,166) replied that they have been using modern technologies. However, there was a large variation in using the technologies among the different zones and *woredas*. For instance, 43% (4,753) of the study participants responded that they used modern contraceptives, while 33.3% (3,680) of the study participants responded that they used improved seed varieties in their agricultural practices. Since 85% of the population in Ethiopia depends on subsistence agriculture, the agricultural community using improved seed varieties is not that appreciable.

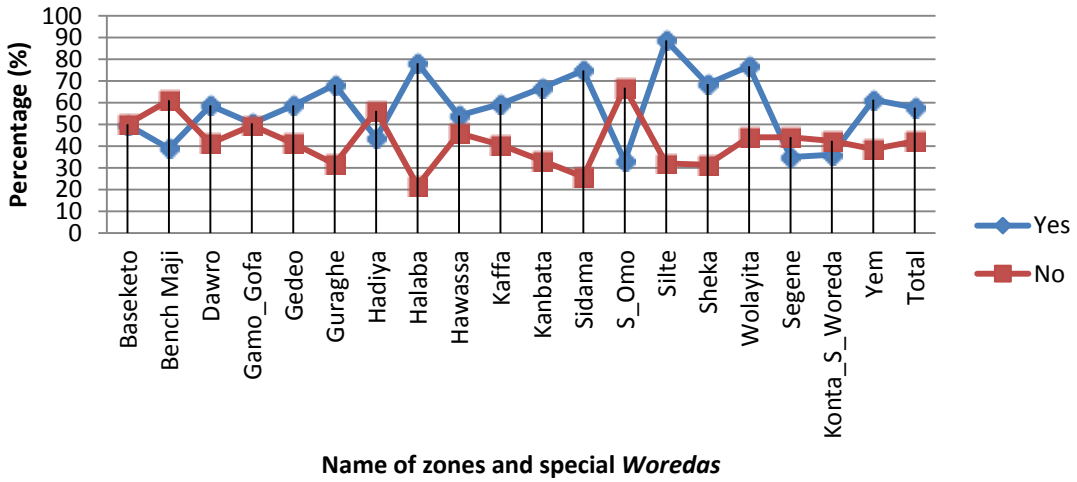

Figure 2. Respondents' perception on whether modern technologies have improved their productivity.

More than 33% of the study participants stated that they were using line-sowing technology. These data suggest that about one-third of the women are applying modern technologies to enhance productivity and increase their income, which may be attributed to the Ethiopian federal and state government's lobbying farmers to apply the latest technology of line-sowing to improve productivity. However, it appears that in Figure 1, the majority of the women (7502) are still using traditional way of sowing.

On the other hand, only 18% (2000) of the study participants responded that they used fuel saving stove. The survey results that most respondents are still using traditional methods of cooking food, which can have negative health consequences (Karki, 2010).

Traditional cooking methods also use wood and animal manure, which can result in the cutting of trees and degradation of soil. However, less than 1 percent (70) responded that they used biogas technology as an alternative to traditional fuel types like wood fire and animal manure. This is because using biogas technology can relieve women from the hard work of cooking with firewood which produces hazardous smoke which can affect their health (Karki, 2010).

Figure 2 indicates that 58% of the women believed that using modern technologies improved their productivity. Nevertheless, 42% of them did not recognize the contribution of technology on their productivity, implying that these women either did not have access to modern technology or not recognize its contribution on productivity.

In addition, women's' perception of modern technology varied among the different zones in the region. Gill et al. (2010) affirmed that the introduction and utilization of modern technology lengthens the productive work day for women and other members of the family. Thus, United Nations Industrial Development Organization (UNIDO) (2008), affirmed this idea as providing women access to modern technology increases their productivity and economy.

As shown in Figure 3, a majority of respondents (52%) in the region believed that modern technology saved their time. However, the perception of women varied from zone to zone. From this, one can understand that the zones are located farther from the center and in different access level of technology. Thus, women who are living in *Basketo* and *Semenomo* zones are most likely disadvantaged in accessing the available technologies than the other zones or the technology they are using may not save time. Upadhyay and Giordano (2005) affirmed that the workload of women decreased by adopting drip irrigation system. Gill et al. (2010) also stated that using *Upesi* stove in Kenya by rural women reduced the time spent on cooking.

As shown in Figure 4, 51.5% (5752) of respondents replied that there was a change in their income due to applying modern technology in their daily activities. However, the level of perception varied among the different zones and special *Woredas* in the region. For instance, 77% (469) of the women in the *Silti* zone responded that using modern technology increased their income.

On the contrary, in the *Bench Maji* zone, 77% (468) of the respondents believed that modern technology did not increase their income. This data suggests that women living in zones and *Woredas* where modern technology was introduced and advocated benefited more in using modern technology than women who did not have either access to modern technology or who do not want use the available technologies. Thus, women who responded

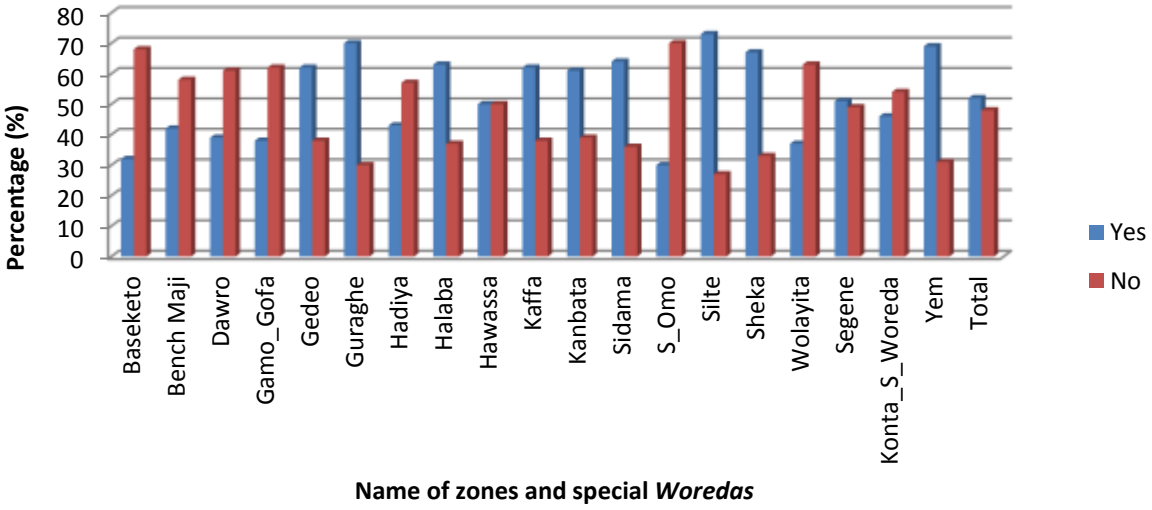

Figure 3. Respondents' perception on whether using modern technologies saved their time.

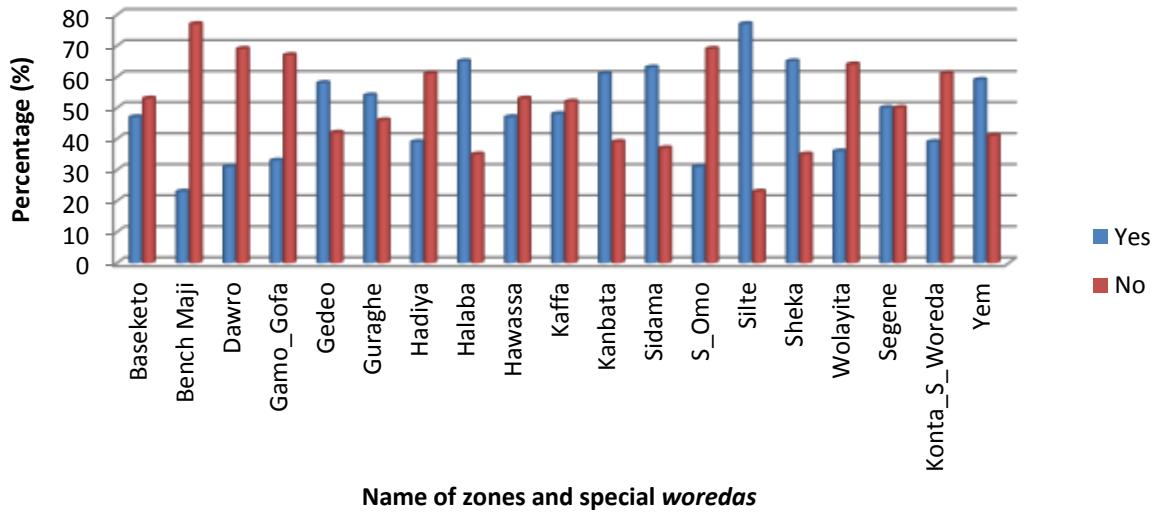

Figure 4. Respondents' perception on whether or not using modern technologies resulted in increase in income.

negatively saying that technology did not help them increase their income were due to lack of adequate access to technology.

As shown in Figure 5, 48% (5336) of the study participants replied that using modern technology helped them to save their labor needs. For example, in the *Sheka* and *Silte* zones, 66% each, *Yem* special *woreda* 64%, *Kambata* 63%, *Sidama* and *Gedeo* zones 62% of the respondents believed that using modern technology decreased their labor demands. This data suggests that modern technology helps women to reduce their burden in their day-to-day life.

According to FAO (2015), labour-saving technologies services can help women's to have free time and improve their quality of life, enabling them to engage in activities of their own choice. Thus, labor saving technology may help to improve the livelihood of women. This is confirmed by FAO (2017) using labour-saving technologies is a valuable solution to reduce women's labour, health hazards and improve livelihoods. However, as shown in Figure 1, 83.6% (93314) of women who lived in the study area used labor intensively in their work due to lack of modern technology.

The study showed that 57.3% (6393) of participants

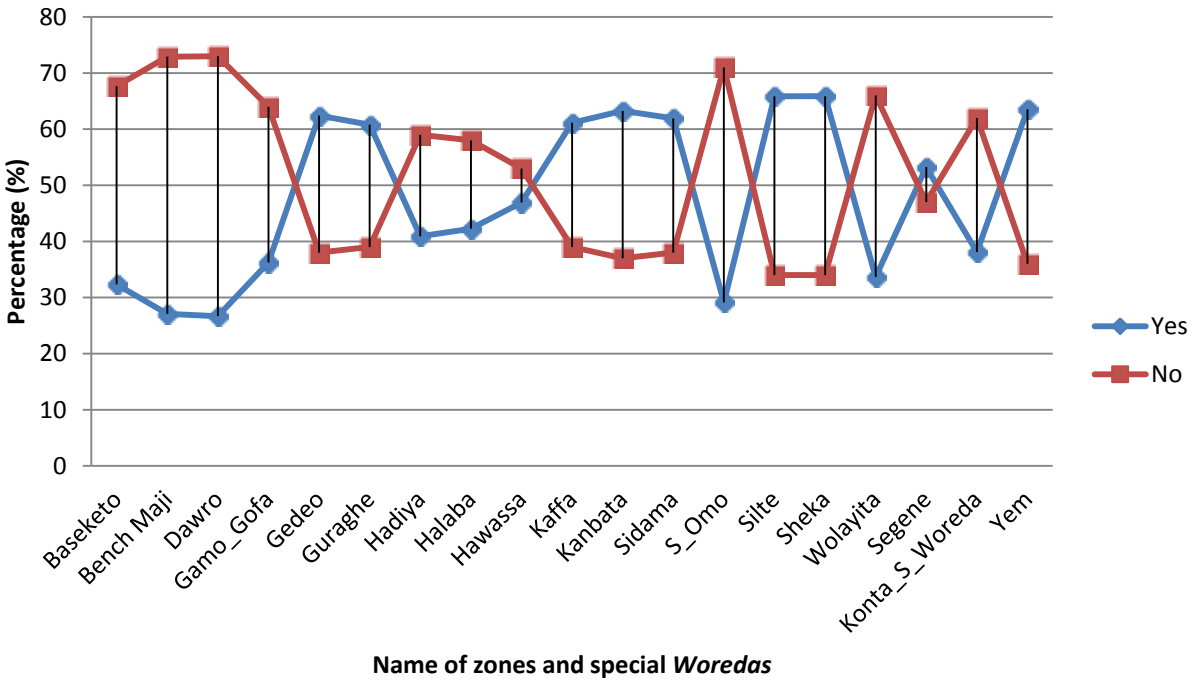

Figure 5. Respondents' perception on whether or not modern technology helped to save their labor needs.

responded that modern technology had no contribution in reducing environmental impact. There is however a difference of perception among respondents of the different zones and special *woredas*. Figure 6 shows that in the *Sidama*, *Sheka* and *Silte* zones more than two third of the respondents believed that modern technology reduced environmental impact.

On the other hand, a strong majority of women in *Gamo Gofa*, *Bench Maji*, *Basketo*, and *Dawro* zones believed that modern technology had no impact in reducing environmental impact. This implies that these women did not either recognize the contribution of modern technology in reducing the environment impact or the technology did not bring any change on environmental impact in their area.

As stated in FAO (2001), environmental degradation affects women to a larger extent than men. Extensive and increasing deforestation, pollution, soil degradation and the drying-up of water sources force women to travel a longer distance, spending more time and energy in producing and finding essential commodities.

As shown in Figure 7, 47.81% (5309) of the respondents believed that modern technologies reduced cost of labor. Over 60% of the women who participated in the study from *Silti*, *Sidama*, *Sheka* and *Kambata* zones responded that modern technology contributed to labour cost reduction.

On the contrary, over 65% of the study participants from *Bench Maji*, *Semenomo* and *Basketo* zones did not believe their labour costs decreased through technology. This indicates that the study participants who used the technologies in their daily life did recognize its contribution to cost reduction very well. However, those respondents who did not have either access to modern technology or not used didn't recognize the contribution of technology to cost reduction.

As shown in Figure 8, more than 50% of the study participants believed that modern technology improved their life, and more than 70% from *Sidama* and *Silte* zones responded that modern technology improved their life. However, more than 65% from *Basketo* and *Wolaita* zone respondents disagree with this idea. This is due to lack of adequate modern technology in the area or not using it. On the other hand, S-Omo 69.89%, Wolaita 69.15%, Basketo 69.66% and Gamogofa 54.75%, of the respondents didn't perceive that using modern technologies improved their life.

Figure 9 shows that more than 60% of the respondents in SNNPR believed that modern technology had a contribution in improving women's health. In addition, over 70% of the study participants from *Semenomo*, *Kaffa*, *Silte*, *Sidama* and *Kambata* zones had a positive attitude on modern technology in improving their health. On the hand, in Baseketo 65%, in Dawro 52%, in Hadiya 51% and in Wolaita 57% of the respondents did not perceive that modern technology improved their health. This implies that some of the respondents didn't realize the contribution of modern technology in improving

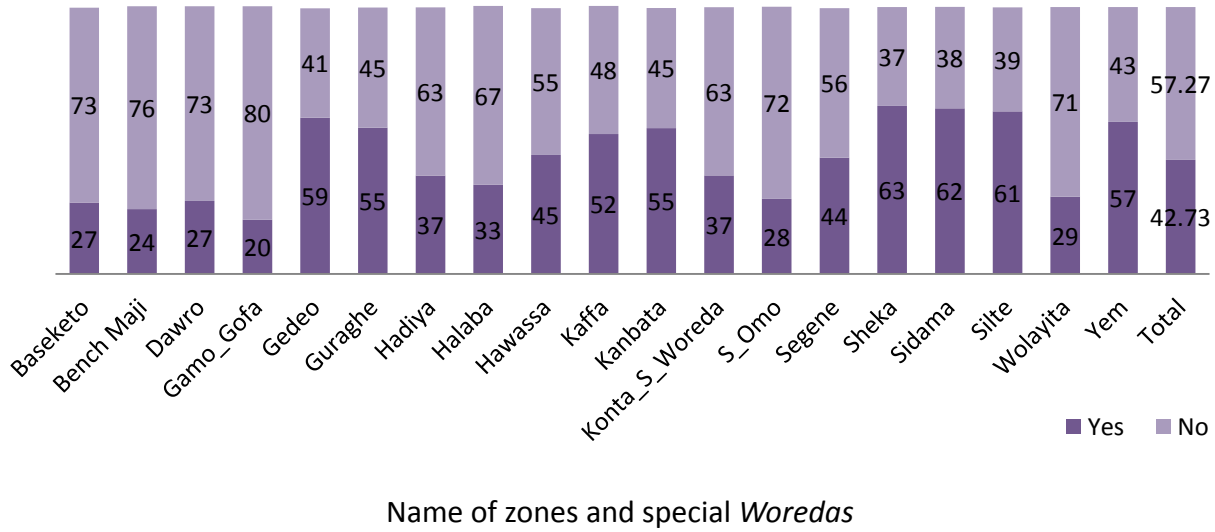

Figure 6. Respondents' perception on whether or not modern technology reduced environmental impact.

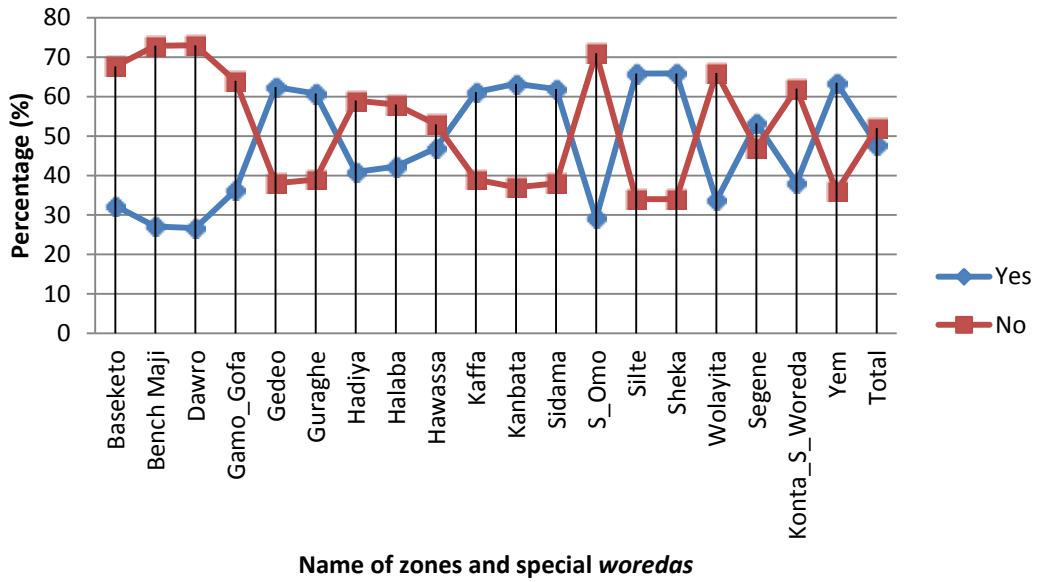

Figure 7. Respondents' perception on whether or not modern technologies reduced cost of labour.

health or they are not beneficiaries.

Conclusion

The results of the study revealed that women expressed belief that utilization of modern technology increased their productivity (40.4%) and improved their health (44.4%). Thus, most of women who participated in this study disagree with the idea of using modern technology enhance their productivity. Among the modern technologies available to them, most women in the study area predominantly used modern contraceptives. A significant number of women also used improved seed varieties and line sowing technology in agricultural production. Regarding their perception on modern technology, they have less awareness on some modern technologies because, in most zones and special *woredas*, either it was not introduced to improve the life of the community or they are not using it. More than half

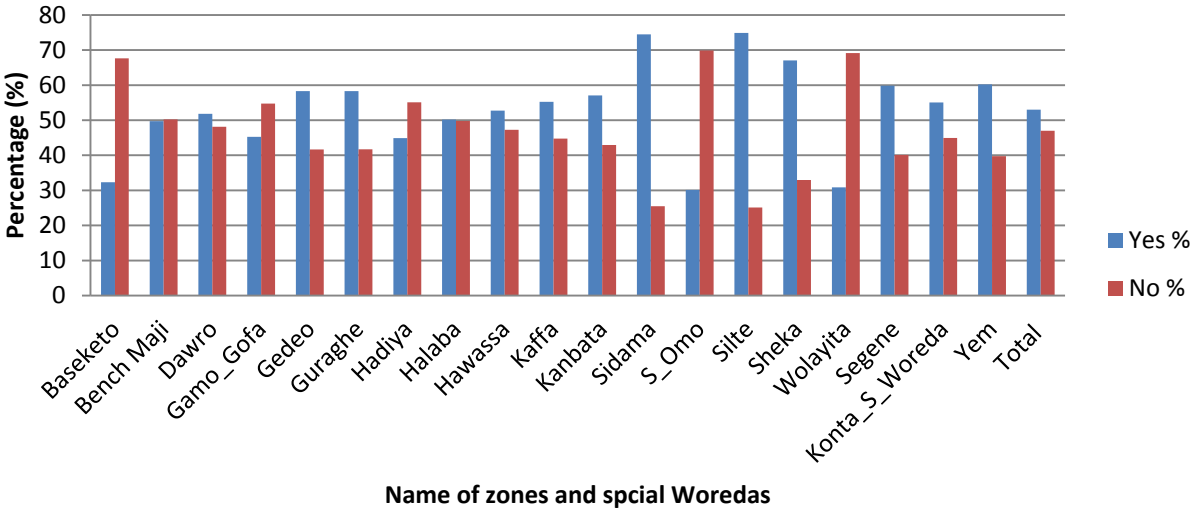

Figure 8. Respondents' perception on whether or not using modern technologies improved women's life.

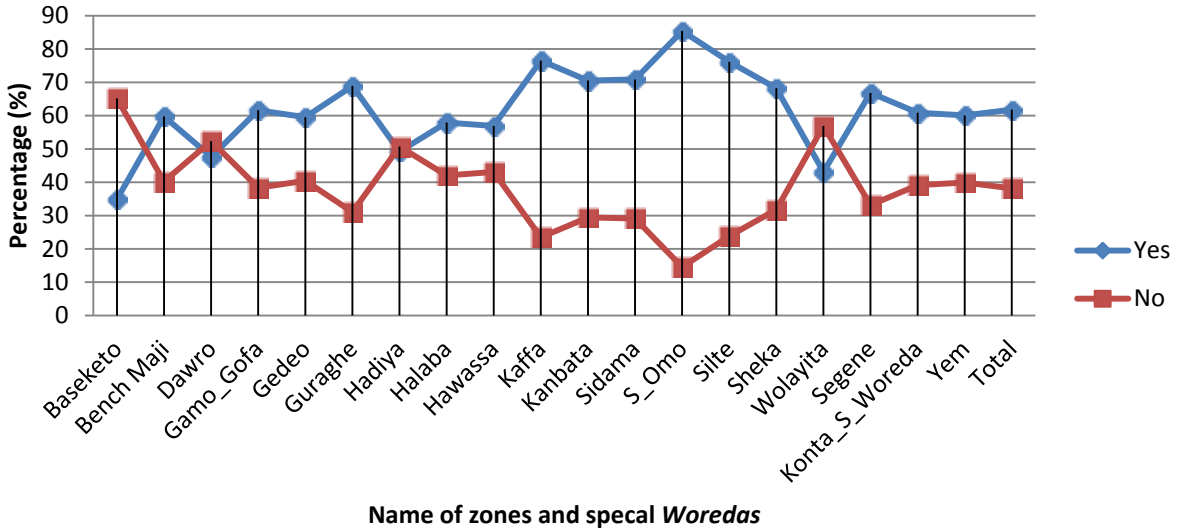

Figure 9. Respondents' perception on whether or not modern technology improved women's health

of the study participants in the SNNPR region have a strong belief in modern technology since it saved their time, increased their income, and improved their life standard and health. However, they were not convinced that using technology could reduce environmental impact and cost.

Recommendation

If women are empowered to make decisions in agricultural activities, they may become more productive and could advance the agricultural development. Women play a major role in agricultural production by investing long hours on work. Thus, introducing and benefiting them in using modern technology which could be applied in agricultural process may help them to minimize their time on work and maximize their productivity.

Training and familiarizing them on how to use modern technology can enhance their income and bring sustainable development. Moreover, it is helpful in reducing poverty as well. In order to improve the life of women and their families, the government and other development partners such as FAO, World vision, need

to work aggressively to introduce modern technologies in communities that are in need.

To enhance the perception of women towards modern technology, the SNNPR government should provide access to use the available technologies in their day-to-day life either on credit basis or as a gift. It is essential to train them on technological capabilities and enhance their productive skills. The concerned bodies such as the Ministry of agriculture and Ministry of women, children and youth affairs should provide them with chances to access modern technology freely or on credit basis; and, there should be a follow-up on its effective utilization.

Especially, the introduction of somewhat less expensive technologies such as fuel saving stoves that reduces the workload of women and environmental impact need to be given high priority. Thus, institutions should focus on maximizing access to technological innovation for women of the region, as it saves their time and energy, improves their health, decreases their workload and reduces negative environmental impacts such as deforestation, pollution and soil degradation.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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