

Volume: 5

Pg. 41-75

Commercialization and Marketing of Women's Indigenous Knowledge Products: A Case Study of Maasai Body Ornamental Products in Arusha, Tanzania

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This study casts light on constraints and potentials of Maasai indigenous knowledge and body ornament production skills. Synergy between indigenous and Western knowledge is appreciated in literature. Study findings show that Maasai women produce indigenous body ornamental products with ample business opportunities. However, there have been little commercialization and marketing initiatives for these products. Marketing information is limited and penetration into the market is shallow. Regression results reveal that a domestic market is important for generating income for Maasai women. Nonetheless, switching to export/tourist markets has a high potential for additional earnings. Productivity, market participation, income, and employment are undermined by low education levels and specialization in production, *inter alia*.

Keywords: *Maasai Women, Indigenous Knowledge, Body Ornamental Products, Income and Employment*

1.0 Introduction

The Maasai tribe is one of the Nilotic traditional pastoralist communities living mostly in northern Tanzania and southern Kenya. Maasai tradition clearly defines socio-economic roles by gender. While men's major economic activity is semi-nomadic livestock keeping, Maasai women are engaged in general family care and indigenous body ornamental production. They sell their products to consumers, middlemen, tradesmen, and use them for the family. Most Maasai people of Tanzania live in Maasai lands in Arusha Region, within

doi 10.26209/ik560447



a wide rift valley strip extending to Maasai land on the Kenyan side. Traditionally, Maasai people were purely pastoralists who kept cattle, sheep, and goats for food. Nevertheless, over the past four decades the tribe has undergone an important transformation to a semi-nomadic society, with a number of members now engaged in other jobs like game guides, purveyors of cultural practices in the tourism industry, security guards in urban areas, and sellers of traditional medicines and body ornamental products. A number of Maasai people have turned into small-scale crop farmers and ranchers, while a few of them have taken jobs in different modern professions of natural and social sciences. Due to competition for multi-purpose land amid degradation of nomadic grazing land, increasing demand for permanent habitats has influenced a turnabout to economic activities other than pastoralism, which were considered taboo or inappropriate for Maasai. Despite globalization occurring since the period before colonialism, Maasai culture and tradition has remained unchallenged by what could be elsewhere reckoned as the fortunes of modernization.

Although Maasai men continue to succeed in diversifying their economic activities, women do not have a variety of economic engagement options to choose from because the tribe's patriarchal culture renders women unauthoritative and powerless (Ngoitiko 2008). Notwithstanding marginalization, Maasai women utilize unique indigenous skills to make ornamental products that are marketable within, and largely outside, their community. Among the indigenously crafted products are: beaded necklaces, belts, earrings, wallets, handbags, bracelet bangles/cuffs, woven garments, leather bracelets, wrist bands, and various souvenirs. Besides handling domestic chores, Maasai women are traditionally artists. Most Maasai women have vast traditional knowledge and skills for creating intricate beadwork, which dominates fashion shows and the tourist markets of Tanzania and Kenya. However, the irony is that very few Maasai women have the ability to create decent employment from their indigenous knowledge to sustainably generate substantial income from their artistry (Maasai Association 2015).

Middlemen and traders profit from the Maasai women's products since they market them to tourists. Unfortunately, Maasai women are the core of ornamental product production, but receive a small portion of the profits. The production process is entirely done in the Maasai matrifocal organization structure, but amid commercialization difficulties because the marketing of such products takes place in the outside ring of the traders/middlemen whose relationship with Maasai women is of independent producer-distributor interaction (Coast 2002). In most cases, women finance all the material inputs and spend their own time to make goods. The intermediating distributors purchase the final products to sell them through different outlets, formal (with receipts issued and tax paid) and informal (without evidence of sale and tax payment). Since women producers are either uninformed about the market value of their products, which cause low prices, or do not have ample access to the higher markets, like the tourist market, their profits are low.

Although Maasai women have indigenous knowledge and skills to make marketable body ornamental products, throughout the course of history they have remained poor. The economic power of Maasai women is substantially inferior to that of men, who have engaged in agro-pastoral activities, i.e. doing both crop cultivation and pastoralism.

To clearly understand Maasai women's situation, it is important to reflect on the historical background of their traditions and existing debates. On one hand, some Maasai women would like to remain "typically traditional" and have been resistant to cultural changes, therefore, being satisfied with their positions/roles (Börjeson et al. 2008; Hodgson 2005; Hodgson 1997). On the other hand, there is the notion that Maasai women have struggled to liberate themselves from gender inequality in their society for a long time (Talle 1987; Talle 1990; Hodgson 2005; Hodgson 2011). This movement has been supported by non-governmental organizations like Maasai Women's Development Organisation (MWEDO) in Tanzania. In addition to the gendered debates on rights and roles, the Maasai community has struggled for recognition, resources, and rights in their countries of Tanzania and Kenya (Kantai 2007; Hodgson 2011). According to Gledhill (2004) and Harvey (2005), the contemporary political movements and economic demands associated with the neoliberal restructuring of states and economies (as propagated by the World Bank, International Monetary Fund, and other multinationals) have induced such struggles.

1.1 Research Questions

This study seeks to answer a few important questions and discuss ways to emancipate the Maasai women through harnessing the potential of their indigenous knowledge and skills for making valuable body ornamental products. The main research question is focused on how to create decent employment for Maasai women by participating in trading ornamental products at the top niche of the market in Arusha. Specific questions include:

- i. What is the potential market size for Maasai women's ornamental products?
- ii. What determines income from Maasai women's ornamental products, and hence employment potential?
- iii. What are the factors limiting the market access for Maasai women producing ornamental products?
- iv. How can production, commercialization, and marketing of Maasai women's ornamental products be scaled up for more income and job creation?

Overall, indigenous knowledge studies regarded traditional practices and products as worthwhile in terms of use in their respective communities, but not actually as products with high universal commercial value. Indigenous knowledge derives impetus from its applications to cultural conservation, the ease of use, low cost of acquisition and transfer, and empowerment of local people through the participation in development and adaptability to the environment (Gata 1993; Jupp 2007). Nonetheless, indigenous knowledge must be appreciated and upheld to meet its developmental role in the modern era of science and technology. Emphasis on the integration of IK (indigenous knowledge) in science and technology will aid development. This paper discusses how indigenous Maasai body ornamental products can be appreciated and contribute to increase women's economic gains and job creation.

2.0 Theoretical and Empirical Perspectives on Indigenous Knowledge

Knowledge is power, whether indigenous or not. The only difference is that the former entails subjugated knowledge in view of historical treatise of contemporary functionalist and formal systemization (Foucault 1980). It is not just knowledge that matters, but its benefits, too. According to Foucault's theory of discourse, subjugated knowledge is exactly what has been, in modern times, regarded as indigenous knowledge that is not considered scientifically compelling recognition of contemporary knowledge. Subjugated knowledge is placed at the low level of the hierarchy of recognized useful knowledge, and therefore, has been disqualified as unpopular knowledge of the locals. Nevertheless, the knowledge itself is what matters and not its origin. The subjugation of some type of knowledge is contingent to each specific situation. While some knowledge could be subjugated in some socio-economic conditions, whether due to a level of sophistication reached or other reasons, in other places it may be a state of art knowledge. Foucault (1980) underscores that from the late 1960s, there has been an upsurge in understanding the essential association between the buried knowledge and erudition, therefore, continuing the cognition of IK in the hierarchy of knowledge and science.

Indigenous knowledge has a role in development processes as a part of social capital for production and livelihood (Harding 1998). While the world is advancing in science and technology, adopting new means and approaches in societies takes place gradually. In communities like the Maasai, identity is fairly conserved, and the process of change is gradual. In the setting where there is a divide between indigenous knowledge and erudition of modernity; in the world with northern and southern sides—the north harboring the most affluent people and south harboring the poorest people—affordability of knowledge and technology is a critical issue to production and growth of the south. Even if indigenous knowledge is perceived as subjugated in some sense, it still remains a cheap complement that is needed for cognitive diversity of knowledge adoptions (Posey and Dutfield 1996). However, using one kind of knowledge does not necessarily discredit other types. Although there is an argument concerning knowledge complementarity, there is an equally important argument for the substitution of heuristically gained indigenous knowledge versus modern knowledge where erudition is not comprehended, inaccessible, costly, and customarily unacceptable.

Maasai women should have the right to sell in any market they wish to, while also gaining the highest profit. The theory of access (Ribot and Peluso 2003) hypothesizes the reasons access to resources and markets may be a problem. Ribot and Peluso (2003) define access as “the ability to derive benefits from things.” The commercialization and marketing of Maasai body ornamental products is constrained by women's inability to derive benefits from the market. In this study, these benefits are regarded as “resources” for transfer of value from buyers to the makers/sellers. Access is regarded as a matter of “power” rather than “right” to participate in the market. Understanding the processes that limit Maasai women in the market from gaining adequate benefits is the objective of this study. We are concerned with widening women's participation in selling their products at lucrative prices instead of being represented, and/or over-exploited by middlemen within and outside the country.

One factor that hinders effective participation in the market is the information gap. This problem that occurs when one party is more informed than the other about their respective transaction, i.e., the famous issue of asymmetric information. Information asymmetry can lead to arrogation of costless returns similar to financial arbitrages. In the case of the Maasai, business people prey on the women who produce goods. As a result, Maasai women receive little because their lack of knowledge causes them to sell products to middlemen at unfair prices. Stiglitz's (1975) screening theory explains how poorly informed agents can extract information from those who are better informed by offering a menu of alternative contracts for a specific transaction, like screening through self-selection in an attempt to resolve the information asymmetry problem. Even so, the screening theory warns that if the seller is too poor, he/she may not be able to understand the important information. This can partly explain why poor Maasai women producing ornamental products amid the information gaps are unable to extract and use information that is relevant to the establishment of their deserved compensation, thus leaving exorbitant profits to the traders of their products in the formal market.

The marketing mix theory addresses issues that are concerned with a set of actions and strategies used to promote brands or products in the market. According to MacCarthy (1960), the first four contents (nicknamed the 4 Ps) of marketing mix theory are: (i) *product*, if marketing is done for products that are in demand, more of the goods will be sold in the market than if the products were not targeted to fit the consumer's wants at the time; (ii) *place*, products being marketed must be at an accessible place where targeted customers can easily purchase the goods; (iii) *price*, products should reflect requisite value for money. For consumers, products should not have to be cheapest to suit their purposes, but prices have to be in tandem with their use value; and (iv) *promotion*, if there are no appealing advertisements, sales promotion, and displays, it can be difficult to penetrate the market.

In the 1980s, the theory of the 4Ps was extended by Booms and Bitner (1981) to add three contents of marketing as markets evolve over time: (i) *people*, unless an organization has the right people to run its businesses, it cannot offer effective products; (ii) *processes*, the process of product delivery is important for one to achieve sales goals; and (iii) *physical evidence*, in any transaction there must be physical evidence for consumers to feel comfortable and secure. In a market where there is no evidence, marketing can be stifled by fear of authenticity and legitimacy.

Beyond the 7Ps, there has been a question as to whether there can be an eighth P. The answer is yes; *productivity and quality* are part of the marketing mix, which facilitates commercialization. The management efficiency and quality of products capture a wide scope of the clientele base (Kotler 2000; Kotler and Gary 1994).

To assess hindrances to commercialization and marketing of indigenous body ornamental products, the gaps owing to described weaknesses and failure in catching up with these 8Ps of marketing must be utilized. The theory hypothesizes a standstill in commercialization and marketing of goods and services overall.

Empirical evidence shows the role of various factors found significant for the protection, promotion, development, and management of indigenous knowledge systems and products. Management of the rights belonging to indigenous knowledge holders and the establishment of accreditation and certification of practitioners are instrumental to sustainable contribution of this strand of knowledge and technology in the communities (Magni 2016). These factors will be an area of interest for this study.

Another key factor to consider is the role of education. Literature shows that indigenous groups conceive education as learning for life experience, which is not confined to formal schooling or a fixed curriculum (Kanstrup-Jensen 2006). There are arguments for and against formal education regarding indigenous knowledge and technology. Formal schooling has the dual potential of losing indigenous knowledge, while, on the other hand, it can also preserve it (Stavenhagen 2015). Through formal education, one can see the benefits of indigenous knowledge complement Western knowledge and can be used to craft solutions to human problems. Therefore, this rescues the disappearing indigenous knowledge in lieu of acquired comprehension that is, at times, believed to be superior. In this study, observing the role of formal education in relation to indigenous knowledge shows how it influences gains from traditional economy.

There is a positive relationship between formal education and indigenous knowledge profit. Formal education adds value to indigenous knowledge products at either the production and/or marketing stages. Studies on Latin America (Barnhardt 2008; Barnhardt and Kawagley 2005) uncover the overall importance and positive impact of the dual learning process (formal and indigenous). Such findings were applied in indigenous educational systems of Alaska native communities and proved to be effective. Women and elderly people are responsible for transferring indigenous knowledge, and once attained, it becomes an integral pool of knowledge applied in solving problems in the development process (Marika et al. 2009). If otherwise, then it means there is clear demarcation between the value created by indigenous learning and that created in the context of what is perceived formal from a Western point of view. Either of these inferences will have important policy implications in this study.

The development and sustainability of indigenous products depend highly on their commercialization and marketing. The commercialization and marketing of products determine market access, i.e., who is reached to purchase products. Maasai women can reach customers of their ornamental products individually through displays on the roadsides or through weekly markets. They also access tourist sites, selling to retail traders and middlemen who also sell to traders. Africa and India show that indigenous knowledge is fundamentally important to both the production and marketing of products in their localities (Kala 2002). Marketing, production, and design are essential functions of economic activity. Therefore, indigenous knowledge is multidimensional as it associates with a full range of key economic functions. The focus of this study addresses the commercialization and marketing of indigenous products as it is not commonly discussed.

Production efficiency is enhanced by the level of specialization. A specialized producer is more likely to be more experienced and therefore produce units more quickly than a non-specialized producer. It is

worth noting that specialization increases the ability to intuit comparative advantage, exhaust gains from exchange, and effectively choose production that is valuable regarding the choices of others. However, not everyone becomes a specialist in the community, and for that matter we do not argue for full efficiency since that could be achieved only in the case where all were specialized (Crockett et al. 2005). Maasai women are not all specialized in body ornamental products, but there is added value if they make this activity one of their major economic undertakings in order to reap the benefits of their unique skills. The level of specialization that results from the concentration of body ornamental products contributes significantly to the earnings of Maasai producers. To uncover this data, surveys identified the women's income from body ornamental products in comparison to the levels of specialization.

Information and communication methods influence the commercialization and marketing of goods. Information can be transferred orally, electronically, in print, and/or by intermediators/middlemen between sellers and buyers, and so forth (Fill and Jamieson 2011). According to Wise (2006), marketing communication involves tactics and strategies to deliver the desired marketing messages. Marketing also enables the entrepreneur to identify goods and services the customers need. In the course of decision making, an entrepreneur would adopt strategies to use in a bid to expand his/her market niche (Onah and Allison 2007). Onah and Allison's study of Nigeria found that small and medium entrepreneurs do not invest in marketing their products. Some limiting factors are budgetary constraints and the ignorance of its eventual dividend. This study explores the extent to which indigenous Maasai women producers harness the advantages of marketing. If women utilize their opportunities, it should be reflected in their incomes.

The central focus of this study concerns improving rural women's employment through the enhancement of indigenous knowledge and technology. It's important to examine how Maasai women have managed to create jobs in the traditional ornamental products sector. Employment can be viewed in two contexts. First, where one engages on her own, and second, where she employs others on some payment terms to produce for her. The focus of this study is on the latter aspect of job creation for women who may not be able to access materials or meet the cost of production, but are endowed with skills to make indigenous products. Literature appreciates the role of knowledge and skills transferred from generation to generation. Ingold (2001) explains, "We are able to be so knowledgeable only because we stand on the shoulders of our predecessors." This is exactly the underlying skills-base for Maasai women engaged in beadwork. Generally, knowledge and skill in the Maasai community are transferred through oral tradition. Empirical literature has not widely measured the magnitude of jobs created by indigenous knowledge in communities of Africa, although there are remarks of high employment potential and output from IK products. So, how much indigenous knowledge is integrated into the socio-economic development framework and how many jobs have been created following that integration? (Magni 2016). According to the Australian Chamber of Commerce and Industry (ACCI) (2001), if participation in Community Development and Employment Projects (CDEP) was excluded from the official unemployment count, the unemployment rate of indigenous Australians would reach as high as 40 percent. The study shows unemployment disparity between indigenous communities (like Aboriginal and Torres Strait Islanders)

and the formal modern industry. However, to achieve the employment objective, one has to be employable and this relies on skill, particularly regarding accessible indigenous training.

Sustainability of the indigenous economy is centred on training and knowledge transfer, which come from experiential learning that also allows indigenous people to adapt to changes overtime (Bates 2009; Briggs 2005). It is imperative to know that indigenous knowledge transfer is not homogenous across societies as it depends on several factors, both demographic and non-demographic, like age, gender, type of occupation, tradition, and political influence. Nevertheless, while sustainability becomes an issue of importance, this study is centred on contemporary improvement and recognition of IK's role in employment creation, particularly for women in rural areas where formal Western education, knowledge, and skills have not penetrated.

This study looks into issues that arise from the work done so far as well as other leading questions of IK contributions and challenges. The literature describes the level of effort placed on the narration of the historical role of IK as an alternative to Western knowledge and its defence against subjugation. We see a reason to underscore contributions of IK to indigenous societies in terms of their livelihoods, and to refute perceptions regarding IK as inferior and backward knowledge. It is obvious there are returns/benefits of indigenous knowledge products, but there is scanty literature articulating the extents of those returns. In a modern context of Western knowledge, marketing services are viewed as an important ingredient of value addition. Nevertheless, there is little evidence on how such techniques of modern nature could be adopted in indigenous production to enhance productivity, employment, and incomes. These are the kind of issues motivating research on IK at this time, when the world is progressing in a sophisticated way. This discussion is focused on the roles of each type of knowledge, and/or how certain knowledge could be augmented in some way by the other type of knowledge.

2.1 Employment of Women in Tanzania

The Integrated Labour Force Surveys (NBS 2006 and 2014) of 2006 and 2014 summarize facts involving women employment in Tanzania. The surveys show women constitute a large portion of the labor force in comparison to men in Tanzania (Table 1). Specifically, in the rural areas, women account for 31.4 percent of the national labor force while men account for 29.8 percent. If unemployment rates increase in the rural areas it is more likely to affect women more than men. In turn, the employment of rural women is a matter of paramount importance.

Area	Male	Percent	Female	Percent	Total
Dar es Salaam	1,538,596	6.0	1,686,349	6.5	3,224,946
Other Urban	3,143,382	12.2	3,609,016	14.0	6,752,398
Rural	7,677,459	29.8	8,095,313	31.4	15,772,772
Total	12,359,437		13,390,678		25,750,116

Source: ILFS (2014), Analytical Report

Note: Proportionate distributions are relative to the total population of the country's workforce.

Table 1: Distribution of Working Age Population, 15+ Years by Sex and Area

As demonstrated in Table 2, women's monthly incomes in Tanzania are generally low. A male's monthly average income in the self-employment group was Tsh. 279,636, while women earned only about half at Tsh. 144,300 (NBS 2014). Women in rural areas mostly comprise the self-employment category.

Age Group	2006			2014		
	Male	Female	Both Sexes	Male	Female	Both Sexes
Paid employed income						
15 - 24	59,717	27,442	46,933	143,637	126,672	135,958
25 -34	79,621	67,339	76,304	321,282	287,498	310,325
35 - 64	146,009	131,830	142,499	413,148	389,084	406,749
65 +	56,843	25,311	49,978	412,373	111,336	372,531
Total	106,272	79,032	98,454	328,856	265,604	308,075
Self-employed income						
15 - 24	69,066	45,109	57,251	153,166	103,640	128,436
25 -34	88,143	63,100	77,039	258,443	147,502	205,118
35 - 64	113,472	51,592	85,619	328,324	156,686	248,136
65 +	47,894	18,947	36,399	161,705	66,652	122,744
Total	94,373	53,163	75,693	279,636	144,300	215,541

Source: ILFS (2006 and 2014)

Table 2: Mean Monthly Income (Tsh.) of Paid and Self-employed Persons, 15+ Years by Age Group and Sex

While scaling up women's employment opportunities, the women, whose labor contributions are significant, receive lower wages than men due to socio-economic factors, such as traditional assignment of in-house roles to women while men engage in financially productive activities.

For example, women engage more in agriculture and household duties than men do (Table 3). Both of these sectors generally receive low pay for more labor-intensive jobs.

Sector	Male	Female	Total
Central and Local government	365,993	266,494	632,487
Parastatal organization	59,306	13,351	72,657
Agriculture	6,016,199	6,141,933	12,158,132
Private informal sector	1,937,860	1,782,442	3,720,302
Private other sector	1,253,331	653,334	1,906,664
Household duties	510,711	1,029,184	1,539,895
Total	10,143,400	9,886,739	20,030,139

Source: ILFS (2014)

Table 3: Distribution of Employed Population Aged, 15+ Years by Sector and Sex, 2014

When distributed by the level of education and sex, data show that more women than men are employed in jobs that require minimal education (Table 4). Due to their lack of education, women are less likely to have decent jobs and earn high incomes since there is a correlation between high education levels and high salaries.

Education Level	Male	Female	Total
Primary and below	1,887,928	2,405,433	4,293,360
Secondary	489,340	477,182	966,523
Vocational training	100,423	48,629	149,052
Tertiary non university	24,119	16,637	40,756
University	10,869	4,503	15,373
Total	2,512,679	2,952,384	5,465,064

Source: ILFS (2014)

Table 4: Distribution of Employed Population, 15+ Years in Informal Sector by Level of Education and Sex, 2014

In terms of different employment parameters, women are more disadvantaged than men in almost all dimensions regardless of geographical location. Although the problem of unemployment is a general concern for everyone, it directly affects more women. Therefore, it's imperative for women to increase their employability, productivity, and income. This study was derived from the need to unlock employment opportunities for women by leveraging their indigenous knowledge and skills.

3.0 Methodology

The study follows a conventional approach to employment participation choice/decision based on earnings and other individual characteristics. This is because Maasai women do not choose to engage in the production of indigenous body ornamental products. They're usually prescribed these jobs because of Maasai traditions. The study uses field survey data from the Arusha region, which facilitates quantitative and qualitative analyses for this case. In addition to the four specific research questions, there are many other analytical frameworks that help cover the full range of issues in this study. Different aspects of this study require different techniques, so the analytical approaches are multivariate to adapt to a number of interplaying factors.

3.1 Analysis of the Market Potential for Ornamental Products

To analyze the market potential for ornamental products, a questionnaire was structured to capture information about the mix of products and the points of sale for the women. Frequency and cross tabulations of statistics are used to examine women's products and their points of sale.

Secondly, the study surveys the sales made by traders to other domestic and foreign buyers at the Maasai markets in Arusha. This section also highlights the women's marketing approaches and customers. The same methods are used to analyze their approaches and sale points. The questionnaire also captured information from the sellers of Maasai ornamental products.

3.2 Determinants of the Ornamental Products' Income

The survey collects data on the incomes made through the sale of indigenous body ornamental products. We understand that income is an important motivation to people's engagement in economic activity; if income from some work is high, it is likely that a large number of people will be attracted to that type of job, provided that they are qualified for it; and if it is low, a number of them may quit that job for some other, provided they have alternative skills. This is a question of opportunity cost of employment taken. Income is determined by several factors, including input costs, level of productivity, quality of goods, and market factors, *inter alia*. For the sake of this particular study, constant factors were used to aid the statistical analysis like all producers hand-weave their products, they put in the same input costs, and they all experience the same economic and production conditions.

Despite these factors, there are some differences across the population of Maasai women living in Arusha such as education, gender of household head, an individual's access to markets, and applied marketing communication. The data captured these differences, which are reflected in the women's incomes. Women may be operating quite homogeneously in the Maasai community, but they can make a different income by accessing other commercial services. The goal of this study is to uncover the socioeconomic factors that influence women's incomes. Market factors are prioritized while using a simple linear regression model to facilitate this study.

3.3 Data

In applying a linear regression on survey data, it is important to note that estimating regression coefficients of the standard linear model is not applicable in conventional Ordinary Least Squares (OLS) manner (Shah, Holt, and Folsom 1977; Binder 1983). The point behind this theory of survey data regression relies on the fact that a finite full population is sampled, which is different from the classical regression theory of infinite population. Important advantages of modelling responses to survey questions as function of sample data are: (i) it is easier and more efficient than using high-dimensional multi-way tables; and (ii) is useful for summarizing how changes in the explanatory variables affect the dependent variable; and (iii) it corrects inherent heteroscedasticity imbedded in survey data. In terms of design-based

inference paradigms, no information matrices exist because variance estimators are generalizations of White's heteroscedasticity-robust estimators, i.e., corrects for heteroscedasticity.

The linear survey regression model for women's income determinants is:

$$(1) y_i = \alpha_0 + \alpha_1 x_{1i} + \dots + \alpha_n x_{ni} + \varepsilon_i$$

y_i represents the income of an interviewee, i , and $\alpha_0, \dots, \alpha_n$ are the model parameters explaining the relationship between explanatory variables (denoted as x 's) and the pendent variable, *income*, while ε_i is an error term. The error term is assumed to be independent observations and normally distributed, with a mean of zero and constant variance, $N(0, \sigma^2)$. This implies:

$$(2) y_i = N(\alpha_0 + \alpha_1 x_{1i} + \dots + \alpha_n x_{ni}, \sigma^2); \text{ and}$$

$$(3) E(y_i) = \alpha_0 + \alpha_1 x_{1i} + \dots + \alpha_n x_{ni}$$

The analyses are interested in the effect of each exogenous variable, x , on income variable, y . The model is a multiple regression for isolating effects of each hypothesized explanatory variable after accounting for others. Controlling the effects of other variables underscores the extent to which the respective variables form real ornamental product income. In practice, α_0 , is either estimated or suppressed depending on the researchers own understanding and theoretical background. The parameter α_0 is a constant or autonomous determinant. Whether to retain it or suppress it in regression, when one is estimating a linear regression, should be able to answer a question about what happens if all explanatory variables were ineffective. Would the dependent variable still be realizable – at least in part? If yes, it means there is an autonomous determinant, α_0 ; if no, then there is a reason to suppress constants in the respective regression.

To avoid error in the linear survey regression model, it's important to identify the variables determining or influencing the sample design so that they can be included in the model. In this case the focus was the commercialization and marketing of indigenous body ornamental products. The questionnaire was structured to these variables, which occupy a significant part in modelling. However, when respondents to those variables are identified, their inclusion in the model may not be warranted from the subject-matter point of view. In order to avoid biased results, standardized software was used (STATA in this case) to do survey linear regressions. This captures the effect of the complexities involved in survey design. To see the problems with standard linear regression in survey data, consider a simple (heteroscedastic) format of Equation (1), $y_i = \alpha_0 + \alpha_1 x_i + \varepsilon_i$, with $\varepsilon_i | x_i \sim N(0, \sigma_i^2)$. The usual OLS estimator of α_1 , call it a_1 , where sums and products are weighted by the reciprocals of σ_i^2 , whose value is assumed to be known, would be an unbiased estimator of α_1 , if the model holds. The estimator of the variances of the OLS, $v(a)$, is model-unbiased under the appropriate specification (the homoscedastic model in the case of $v(a)$). Although this is the case for the usual OLS regressions, there may be doubt about the validity of the OLS model in estimating complex data. For this reason, instead of estimating α_1 , it may be more appropriate to estimate the finite population counterpart of α_1 , which can be denoted as A . Although a (the OLS estimator) is a model-unbiased estimator for $\alpha_1 \approx A$, it is not generally design-unbiased.

Following the possible problem of OLS estimation, which is similar for Generalized Least Squares (GLS), the estimators in the linear survey regression model are modified to take care of the highlighted complexity, especially in any case where there may be a need for an identifier variable to be included. If a standard software is used for survey data regression, it is capable of considering such complexities in estimation, which is done in this study. Using survey linear regression smoothly resolves the design and model bias problems. Further details on how this works can be explored in Nathan and Holt (1980).

From the general estimation, Equation (1), the estimation model is,

$$(4) \text{ income} = \alpha_0 + \alpha_1 \text{market access} + \alpha_2 \text{education} + \alpha_3 \text{specialisation level} + \alpha_4 \text{marketing approach} + \alpha_5 \text{goods delivery mode} + \alpha_6 \text{gender H/H head} + \varepsilon_i$$

Exogenous variables are chosen based on literature and with the interests and themes of this study. Nevertheless, variables in Equation (4) are on aggregate terms, and so they are explained to highlight the way they are operationalized empirically in this case.

3.4 Terms

- i. *Income*: Drawn from the surveyed information reported by respondents. Expressed in shillings.
- ii. *Market Access*: Refers to the market segment/niche identified by Maasai women to establish the relationships between access points and income earned. Sales can be completed with individual users (locals), tourists (foreigners), cooperatives, middlemen (between women and traders), or directly to traders (loosely, the wholesalers).
- iii. *Education*: Education data were collected at the highest level attained, from those without formal education to tertiary education level. Levels were expressed as none, primary, secondary, or tertiary.
- iv. *Level of Specialization*: Women ranked their levels of specialization in ornamental goods production relative to other activities they perform in their households. Expressed as high, moderate, or low.
- v. *Marketing Approaches*: Drawn from the survey regarding the way women disseminate information about their ornamental products (orally, electronically, print, through middlemen, or a combination) and its impacts on women's earnings.
- vi. *Goods Delivery Mode*: The variable is captured from interviews. It reflects alternative ways by which ornamental products are distributed to buyers.
- vii. *Gender of Household Head*: This is drawn from the survey data and is used in the model as a dummy variable with a value of 1 if female-headed and 2 if male-headed.

3.5 Hypotheses

- i. There is a positive impact of market access, education, and specialization on women's incomes.

- ii. There are positive influences from widely used marketing approaches and delivery modes on women's incomes.
- iii. There is a positive impact of female household headship on women's incomes.

In estimating Equation (4), the constant term is repressed to reflect a reality of “zero slope” of the fitted line for a case of income that comes strictly from commercialized body ornamental products. If the predetermined variables are completely inoperative, sales returns should be unrealizable to Maasai women dealing in this line of production. Some products will still be there, but may be for their own household subsistence use, and not for income generation. However, women will also be making income from other sources.

3.6 Factors Limiting Market Access of Maasai Women Producing Ornamental Products

The preceding regression will establish the relevance of different types of access/avenues for Maasai women to engage in the market. The estimation will indicate the important factors limiting their market participation. The rationale for this experiment is to make recommendations that address the limits of participation for women, in turn motivating employment and profits in this sector. It is worth noting that limitations are found internally and externally of the community. In terms of the quality of the goods produced, if the market is not satisfied with quality, the sellers' access will be limited. When addressing sustainability and quality improvement, the ways in which knowledge is transferred is also an important matter. In addition, other demographic factors will be analyzed, including the gender of the household head, to uncover the implications for women's activities related to the production and marketing of ornamental products, *inter alia*. Analysis will adopt quantitative techniques by using frequency and cross tabulations to summarize and analyze the responses to questions focused on market access factors. A few qualitative observations obtained in the field will also be included.

4.0 Ways to Scale Up Production, Commercialization, and Marketing of Indigenous Ornamental Products for More Income and Job Creation

To find out the ways to scale up production, commercialization, and marketing of indigenous ornamental products for more income and job creation, literature and field data will be used to form suggestions that can help change views toward indigenous knowledge products and show them as important for production, income, and job creation for Maasai women in rural areas.

4.1 Data Source and Description

The study applies primary data collected from Arusha in Northeast Tanzania, the native region for the Maasai tribe. The data were collected using a structured questionnaire with questions pertinent to answering specific research questions.

Survey Population: the study targeted Maasai women living in the Arusha region. The *sample frame* includes all women living in two districts of Arusha, Mjini and Monduli. These districts were purposefully chosen since they are among the most famous districts for producing and selling indigenous Maasai body ornamental products and are also accessible to interviewers. Arusha Mjini, which is a large Maasai market for products produced in rural Maasai places, and six villages of Monduli district were surveyed (Table 5).

District	Villages/Area	Number
Arusha Mjini	1. Maasai Market	31
Monduli	2. Esilale	6
	3. Lashaine	14
	4. Meserani	15
	5. Mto wa Mbu	5
	6. Naserani	1
	7. Ularashi	48
Total		120

Table 5: Sample Distribution by Villages

Out of 120 respondents, 31 were from Arusha Mjini and 89 from Monduli. A total of 94 respondents were Maasai women who produced and sold body ornamental products. Out of 94, 16 women had retail sale slots in the Arusha Maasai market where they sold their products. Others were producers who sold ornamental products as first-hand owners through different channels. A total of 17 respondents were specialized in selling Maasai ornamental products, but did not engage in production.

Sampling involved a combination of both purposeful and random procedures to select the elements from the mentioned areas. Two districts in Arusha were chosen for the study because they are recognized for the production and sales of Maasai body ornamental products. The selection of villages/areas was dictated by the scale of production and sales of Maasai body ornamental products. Monduli Ularashi, Meserani, and Lashaine comprised the majority of respondents due to their substantial production levels. These villages have large populations of Maasai women producing body ornamental products owing partly to their proximity to markets. Even so, we adopted a random sampling procedure to select the elements (i.e., women and sellers) who were interviewed.

Figure 1 shows the age profiles of respondents. Most respondents (70 percent) were between the ages of 26 and 45. Only 2 percent of respondents were above the age of 66 years and there was no observed child labor in the production of Maasai ornamental products. All women engaged in this activity were above 20 years old except one who was 19. The reason for this finding could be due to the fact that this job is somewhat technical and is largely handled by experienced women.

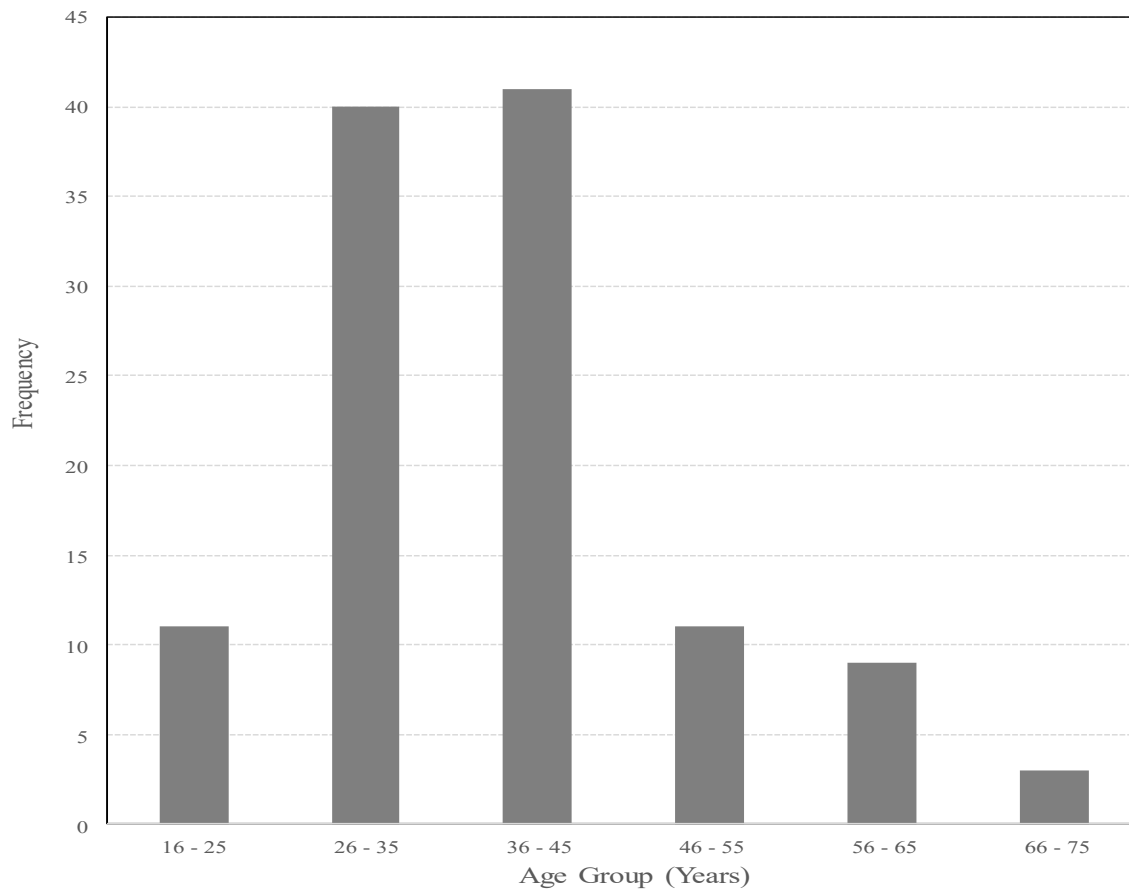


Figure 1: Age Profile of Respondents

Maasai women producing body ornamental products are not highly educated. Approximately 43 percent of them did not attain any formal education, while coincidentally the same proportion (43 percent) had only attended primary education as the highest level attained. About 12 percent attained secondary education, while only about 1 percent had tertiary education. The few with secondary and tertiary education were not actually the producers of indigenous Maasai ornamental products, but the sellers who owned shops in the Maasai market.

Education Level	Frequency	Percent
No Formal Education	52	43.3
Primary School	52	43.3
Secondary School	15	12.5
Tertiary Education	1	0.8

Table 6: Educational Background of Respondents

Most respondents were married (74 percent), while the rest were single (15 percent) or widowed (10 percent). The effects of women's activities, incomes, and welfare in the household were studied, especially in terms of the gender of the household head. In Maasai communities, the roles of males and females are well defined; however, this study explores the effects of each gender as household heads on women's production and sales of ornamental products.

Marital status	Frequency	Percent
Single	18	15.0
Married	89	74.2
Divorced/separated	1	0.8
Widow	12	10.0

Table 7: Marital Status of Respondents

Maasai women are a source of labor to the tribe, while men are usually engaged in livestock rearing and security of the community. Women are engaged in almost all other spheres, including farming and other businesses. Table 8 summarizes the economic functions Maasai women perform.

Activity	Engagement (%)
Farming	36.3
Livestock	31.9
Business	29.7
Other	2.2

Table 8: Main Activity of Maasai Women Respondents

Maasai women produce ornamental products to supplement income activity after they execute their main economic activities (farming, livestock keeping, and other businesses). Unfortunately, producing ornamental products does not serve as a major economic function of the Maasai women, but it is rather a subsidiary activity.

4.2 Analysis and Discussion of Findings

4.2.1 Market Potential for Maasai Women's Indigenous Products

While analyzing the data, it's important to keep the four research questions in mind. The first question addresses the potential market for indigenous ornamental products. In addition, marketing and commercialization strategies are discussed to change policies and increase women's employment and income since Maasai women produce most of the products that are sold both in domestic and foreign markets (Table 9).

Types of Goods Produced	No. of Women Producing	Average Price/Unit
Leather Neck Beads	39	13,667
Leather Belts	67	26,000
Hand Ridges	78	6,864
Pendant Velvet Ties	68	40,406
Pendant Bracelets	68	20,786
Heather Zip Maasai Cuffs	8	13,333
Maasai Beaded Collars	40	8,000
Beaded Decorations for Lower Leg	76	13,367
Leather Hobo Bags	4	16,460
Leather and Straw Bags	4	42,000

Note: Column 2 is the number of women producing each type, respectively, out of 94 who revealed participation in production.

Table 9: Main Types of Body Ornamental Products Produced by Maasai Women in Arusha

Some products that are produced by most women are: hand rings, leather belts, pendants, velvet ties, and bracelets, while others, notably the leather hobo bags and straw bags, are made by few women. The correlation coefficient between the women's inclination to make their respective products and their prices is 0.24, indicating weak quantity-price interdependence. One cannot argue that production of some type of ornamental products relates significantly with the price attained in the market. There is a high correlation between the prices attained by the seller/traders of these goods and the women's prices (coefficient of 0.85). This implies that the producer's and consumer's prices are highly interdependent. For that reason, if the sellers would secure equivalent prices in their segment of the market, women could get better prices too.

The product mix of ornamental goods is assorted, however, there is shallow participation of women in the market. The widely-accessed segment of the market is composed of local individual users, which was accessed by around 81 percent of women, followed by the tourists' niche, which was accessed by 35.5 percent of women. Other market segments were not adequately reached, including sales to cooperatives, traders, and middlemen. Sales to individual local users and tourists are done largely by Maasai women in designated places, including the satellite local markets, roadsides, and tourist grounds around national parks. There are very few traders who collect ornamental products directly from Maasai women at home. Some middlemen do purchase ornamental products from homes to sell to traders in Arusha city (Figure 2).

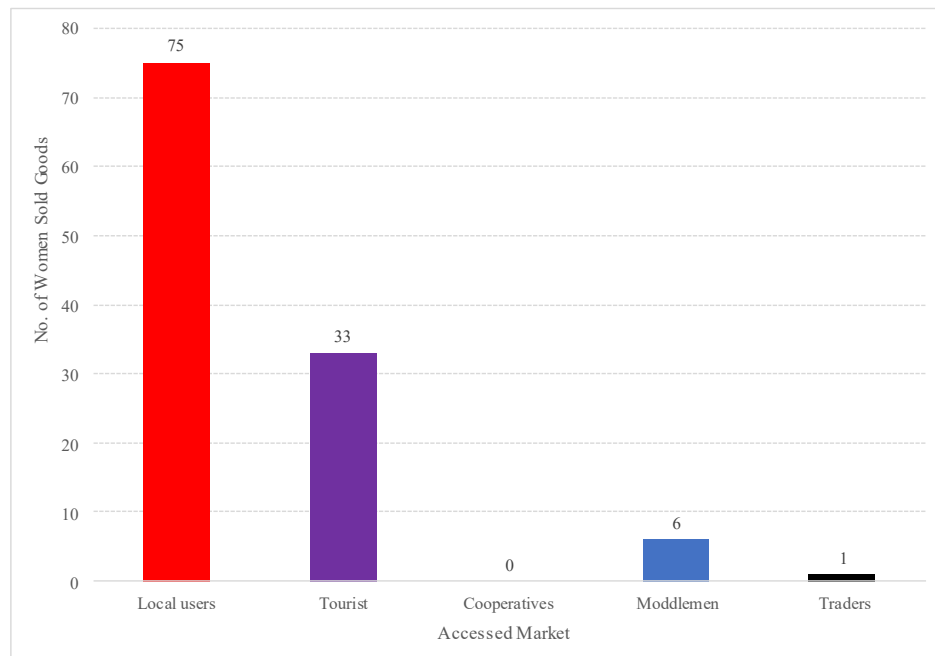


Figure 2: Maasai Women's Sales by Market Category

Figure 2 shows access gaps for women as they attempt to reach buyers on their own. Respondents were not involved in any marketing cooperative societies that marketed Maasai products. This simply means bargaining is done on an individual basis. The individualized approach to the market results in the women's inability to reach distant (export) markets, low bargaining power, limited competitiveness, and the possibility of traders and middlemen to purchase goods at low prices. Price signals are generally sent to women by buyers who purchase products as non-commercial users. Otherwise, it is signaled by middlemen when they purchase and sell at a margin to the traders who dispense those goods as formalized retailers. Further, Maasai women do not know the international scope of their products. Instead, they sell to foreigners visiting tourist parks from outside the country. This is not anomalous since the products have evolved from traditional knowledge or are recognized internationally. One Maasai woman said, "Buyers just come as I display on the roadsides. I don't have any marketing strategy, but I explain my products when the buyers ask." In this respect, it's evident that there is a need for marketing cooperatives. The *modus operandi* of the potential cooperative society can be thought through, but the fact that remains is Maasai ornamental products have already attracted demand from within and outside the country. The cooperative society could mobilize women to expand the production and sales of their products at good prices. As statistics show, the market for Maasai body ornamental products is not yet structured in an organized way. Since Maasai women produce and market their products individually, if commercial reorganization is done within the indigenous settings where they are produced, more goods will be created in response to a wider market, therefore increasing employment and demand.

High quality products are important to increasing demand. The quality of Maasai body ornamental products was assessed from the sellers of those products in terms of Likert scale; low, moderate, or high.

The Likert scale gives a range of response choices – from one extreme to another; and usually, it includes a moderate or neutral midpoint. About 67 percent of sellers indicated a high-quality rating, while the remaining 33 percent perceived the products as of moderate quality. There were no low- quality ratings. Regarding these outcomes, the ornamental goods produced using indigenous knowledge can be quite competitive in the market if quality and marketing improvements are made. The widespread sale of products will also provide important market feedback on the quality to advance the women’s knowledge in this line of activity. These advancements could increase income and employment in the rural sector, especially for the women.

Local customers are the most important group of buyers (as shown in Figure 2) since the established sellers of those goods prefer the foreign market over the domestic market. In contrast to the Maasai shops located in urban areas, sellers prefer foreign markets since they are more accessible to tourists.

Approximately 60 percent of the sellers reported that foreign sales are more significant than sales to domestic buyers. This means that indigenous Maasai body ornamental products have potential in export markets. Women producers experience difficulty in rural areas despite the fact that in formal markets, their goods are a part of the country’s tradable products.

4.2.2 Women’s Income

The second determinant of indigenous Maasai women ornamental products’ income is analyzed using a linear survey regression model. The dependent variable in the regression equation is the level of income, but independent variables are generally dichotomous. Exogenous variables account for the choices made by women or different situations that are likely to cause variations in their incomes. Since the independent variable is not dichotomous, simple linear survey regression is preferred to a binary variable regression model. Table 10 describes Maasai women’s income solely earned from ornamental products.

	Percentiles	Smallest		
1%	4.561212	4.561212		
5%	6.841817	4.561212		
10%	9.122423	4.561212	Obs	94
25%	18.244850	6.841817		
50%	45.61211		Mean	57.06852
		Largest	Std. Dev.	61.82227
75%	68.41817	182.448500		
90%	136.8363	228.060600	Variance	3821.993
95%	182.4485	228.060600	Skewness	2.794774
99%	410.509	410.509000	Kurtosis	13.75049

Note: Exchange rate source is BOT Annual Report 2015/16 (Tsh. 2,192.4/1US\$ at end June 2016).

Table 10: Descriptive Statistics of Incomes from Body Ornamental Products (US \$)

The summary statistics indicate a mean income of Tsh. 125,120 per month, with standard deviation of Tsh. 137,727, showing a widely-dispersed span of earnings. The first quartile of women was grouped with income levels less than Tsh. 39,989 per month. The second quartile had incomes of up to Tsh. 99,995. The third quartile registered incomes of Tsh. 150,004, and the 99th percentile recorded as high as Tsh. 900,002 in once case. The range of incomes is quite large. For example, the difference between the 75th and 99th percentiles is over 300,000 Tsh. Figure 3 portrays a normal distribution of respondents' incomes.

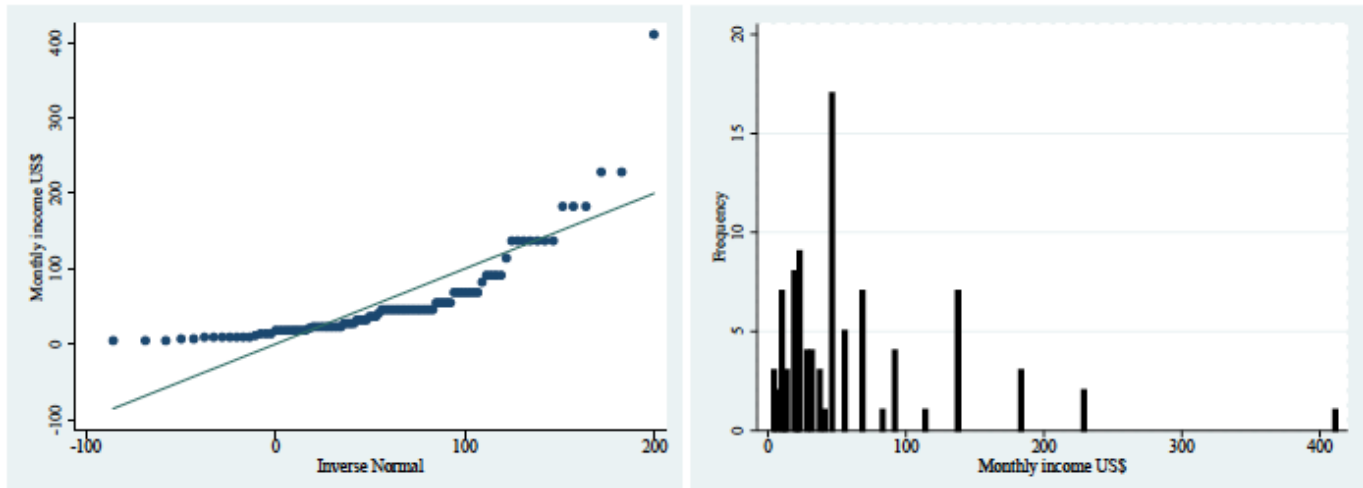


Figure 3: Normal Quantile Plot and Frequency Distribution

Maasai women's incomes from indigenous body ornamental products are skewed to the right side of the sample distribution, and with thick-tail owing to the dispersed distribution. However, the issue of unequal earnings is beyond the scope of this study of partial incomes solely gained through the sale of ornamental products.

To explain the dichotomous explanatory variables, there are no detailed descriptive statistics presented due to the small and random sample of this study. Below there is a summary of important proportions in Table 11.

		Proportion (%)
Type of Accessed Market	Individual locals	0.8065
	Individual tourist	0.3548
	Coopearatives	0.0000
	Moddlemen	0.0645
	Traders	0.0108
Level of Education Attained	None	0.5161
	Primary	0.4194
	Secondary	0.0645
	Tertiary	0.0000
Level of Specialization	High	0.3226
	Moderate	0.5914
	Low	0.0860
Marketing Method Commonly Used	Oral	0.9785
	Electronic /Print	0.3763
	Middlemen	0.0430
	Some Combination	0.0000
Goods Delivery Mode	Collected at Home	0.5376
	Market	0.3763
	Middlemen	0.0860
	Traders	0.0108
	Some combination	0.0108
Houdehold -Head Gender	Female	0.4839
	Male	0.5161

Table 11: Proportions of Observed Distribution of Respective Exogenous Variables

As the summary in the table illustrates, there are obvious commercialization and marketing problems for indigenous Maasai women's products. Specifically, the goods are generally delivered to homes (54 percent), while 38 percent depend on the traffic of the local markets to sell their products. Producers do not have ample contracts with large traders or intermediating organizations and cooperatives to purchase and distribute products. As a result, the possibility of getting reasonable prices for their goods is difficult. Approximately 98 percent of producers rely on word of mouth and in-person transactions, while only 38 percent of them can use electronic and printouts to disseminate information about their products. The level of specialization in the production of body ornamental products is moderate (59 percent of women with an averaged specialization) because production is actually a supplementary activity to other economic engagements; however, there are a few women who spent most of their time producing those goods, and so, around 32 percent of women are highly specialized in this activity. Most women did not attend formal Western schools. Instead, they received their knowledge from indigenous training (52 percent), whereas those who attained primary school constitute 42 percent of the sample. The largest number of women (81 percent) access domestic markets of local individuals and 35 percent sell to foreigners who visit Arusha.

Generally, 52 percent of visited households were headed by men and 48 percent were headed by women. When considering this fact, it is important to understand traditional Maasai households. Typically, males

are largely polygamists with several wives. Wives are usually placed in separate households and given some mandate to manage their respective homes and the men speak for them. When a Maasai woman is the household head, it means she is entrusted with the management of a home, including children, livestock, and other family property. Even so, she is not above a male spouse by authority if married. Although women do not traditionally own properties, they act as custodians while bringing up children in cases where husbands are not alive, since Maasai women are typically married to older men. These facts indicate that a women households' headship is generally temporary. Nonetheless, in this study we recognize women household heads as indicated because they have influence in this position during their family life.

Equation (4), located on page 53, shows the strengths of the hypothesized variables in explaining the levels of income earned by Maasai women from ornamental products (Table 12). Variables "tertiary education" and "sales through cooperatives" were eliminated for accuracy.

Number of strata = 1
Number of PSUs = 94

Number of obs = 94
Population size = 94
Design df = 93
R-squared = 0.6186

	<i>Income</i>	<i>Coef.</i>	<i>Std. Err.</i>	<i>t</i>	<i>P> t </i>	<i>[95% Conf. Interval]</i>	
Accessed market	Local individuals	83366.21	35275.5	2.360	0.0200	13316.05	153416.4
	Foreign tourists	87255.62	45630.82	1.910	0.0590	-3358.137	177869.4
	Middlemen	23602.09	68632.07	0.340	0.7320	-112687.6	159891.8
	Traders	-27263.85	45029.13	-0.610	0.5460	-116682.8	62155.08
Education	No formal education	5293.938	76923.82	0.070	0.9450	-147461.5	158049.4
	Primary education	-33702.68	67723.55	-0.500	0.6200	-168188.2	100782.9
Level of specialization reached	Moderate specialization	-3421.516	32926.99	-0.100	0.9170	-68807.98	61964.95
	Low specialization	-107861.7	38499.26	-2.800	0.0060	-184313.6	-31409.78
Marketing approach used	Oral	77406.79	68522.65	1.130	0.2620	-58665.62	213479.2
	Electronic/print	18137.32	48686.84	0.370	0.7100	-78545.09	114819.7
	Middlemen	-21563.22	83707.1	-0.260	0.7970	-187788.9	144662.5
	Combination of marketing methods	3357.698	50381.38	0.070	0.9470	-96689.74	103405.1
Goods delivery mode	Home sales	-43533.58	37045.6	-1.180	0.2430	-117098.8	30031.64
	Market sales	-53076.6	33909.9	-1.570	0.1210	-120414.9	14261.74
	Middlemen sales	60040.12	48765.02	1.230	0.2210	-36797.54	156877.8
	Traders sales	322767.9	85537.89	3.770	0.0000	152906.6	492629.2
	Combination of sales methods	28666.81	42073.75	0.680	0.4970	-54883.32	112216.9
	Gender	-3308.344	28198.37	-0.120	0.9070	-59304.72	52688.03

Table 12: Linear Survey Regression Results

Some insignificant variables in the study are education, marketing approaches, and gender of the household head. The theory hypothesizes that higher formal education implies better income, but this is not proved to be the case for Maasai women producing ornamental products in Arusha. The same goes for the gender of the household head in relation to marketing strategies and income generation. The significant variables include the types of markets that women can reach, level of production specialization attained, and the types of delivery for goods.

Local individuals, foreign tourists, middlemen, and traders were used for the most common market segments in the estimation model to investigate market access in a disaggregated view. The findings indicate that local individuals have a positive coefficient, which is significant at 5 percent. The average income rise, owed to switching to this segment of market, can amount to Tsh. 83,366 per month for the studied group of women. The local individual market is the easiest market segment for Maasai women to reach and remains important. If domestic markets for these products increase, there is a high potential for profit.

Women's venture to sell their indigenous body ornamental products to foreign tourists is positive to their income and significant at 10 percent. The average income gains from switching to this market segments is Tsh. 87,256 per month for the studied sample. These results show a reasonable potential from tourist markets, if women could access it. Because of a communication barrier and other reasons, it is not a market niche that can be well-accessed by a significant number of Maasai women. A mechanism to access this market should be designed for women through organizations or cooperatives that aid in marketing and commercialization. As noted earlier, women in the enumerated villages don't belong to any cooperatives. This limits expansion into export markets of indigenous products.

The use of middlemen and traders to make transactions has proven ineffective, which is why women choose to do it themselves. They don't appreciate the importance of these people and they have not seen enough incentives to attract them to these market channels. In some ways, they are not trustworthy compared to organizations and cooperative societies. Women are distrustful in the cases where there is an information gap concerning producer-consumer price margins. Instead of using middlemen and individual traders as intermediaries, they attempt to access domestic and foreign individuals' markets.

The level of specialization attained was analyzed in two perspectives; *low* and *moderate* specializations, while *high* specialization was not included in the analysis since there were no women who indicated to have reached that level. Since there is minimal dedication to the production and sale of ornamental products, income is impacted. For the regression, two specific variables represented respective levels reached by each respondent dichotomously, and the earned incomes were regressed against the reported status. For each state, specification was put separately in binary form, i.e. the one perceived moderately specialized was coded 1, and 0 otherwise. Similarly, the one perceived lowly specialized was coded 1, and 0 otherwise. This was done to simplify the results, including the resulting coefficients. Low specialization in production was negative at a 1 percent level. Switching from some specialization attained to low or no specialization levels would scale down average incomes of the specialized individuals by Tsh. 107,862 per month. Specialized producers should be the ones making relatively high incomes, so, for better outcomes, specialization in production must be given priority. The findings are consistent with the postulation that low specialization negatively impacts income owing to inefficiency.

The delivery of goods through traders who are centered in market place have significant positive impacts on women's income. The trade mode was significant at a 5 percent level, and it indicates that a shift from other sales methods to formal trade could raise income by Tsh. 322,768, which is a substantial amount for

indigenous Maasai women in this sector. Trading stores are owned by specialized producers who perform formal transactions. Delivery through home collections, the use of middlemen, and selling in the weekly markets do not seem to have significant potential for increasing incomes. Establishing formal trading can be demanding for indigenous Maasai women, but it is not an insurmountable challenge. If there is a cooperative society or organizational arrangement that helps with marketing and commercialization, formal trade inside and outside the country will result in higher income and employment.

4.2.3 Factors Limiting Market Participation of Maasai Women Producing Ornamental Products

The third objective of the study was to investigate the factors limiting the market participation of Maasai women producing ornamental products. Without a market for their goods, women can't predict production. Their lack of market access is among the many factors that hinder production and reduce employment expansion possibilities. The factors limiting market participation are both internal and external to the Maasai community. Several factors limiting the participation of Maasai women in the market that were observed are briefly described here:

- i. *Security of Jobs*: Some Maasai women work with middlemen and traders who purchase goods to sell in the urban market without written contracts. Out of 90 women who were asked about contracts, only 8 had sales contracts with middlemen and traders. If there were firm contracts, some middlemen/traders could purchase and pay even after selling the products. In the absence of sales contracts, women cannot offer their products for deferred payments. This reduces long-term relationships and dynamic interactions among producers and sellers in the market, rendering women to extra risk and limited production. Further, even the physical evidence (i.e. the material part of the marketing mix services) at selling point is largely missing. Only 14 women out of 91 who responded to the question on physical evidence revealed that they have it.
- ii. *Absence of Marketing Strategies*: Most Maasai women producing ornamental products do not follow marketing strategies. They display their goods in the weekly local markets and on the roadsides. They also receive calls from customers about their products. They don't use advertisements, trade fairs, or other sophisticated marketing methods to promote their products. When asked about marketing strategies, women most commonly replied, "I don't have marketing strategy."
- iii. *Low Price Disincentive*: Maasai women face a hurdle of unfavorable prices for their products because they do not reach the lucrative, end-users' segment, especially in terms of exports (Table 13). Approximately 60 percent of women find the low prices to be a hindrance, which causes them to opt out of producing and selling large amounts of indigenous body ornamental products. Most women complained about little market access, saying, "We cannot access lucrative markets. We spread out products on the sunny roadsides to display, and finally we sell them at very low prices."

Price Is Not Good Enough in the Market	54	60.0
Technology Is Limiting Productivity	36	40.0
Cheating by Middlemen	14	15.6
Distance from the Market (Goods Market Segment Not Reachable)	46	51.1
Communication is a Hindering Factor	44	48.9
Men Dominate decisions, i.e. Women's Freedom Is Limited	4	4.4
Education Is a Limiting Factor in Engagement in this Activity	20	22.2
Other	24	26.7

Note: The numbers and proportion are out of 90 respondents who answered a question on respective hindering factors.

Table 13: Challenges to Production and Marketing of Ornamental Products

As discussed earlier, in a competitive environment, Maasai women may not be able to compete on their own unless they are affiliated with an organization, like a cooperative society or group, to attain high bargaining power. A desperate interviewee revealed her inability to bargain as she said, “In as much as I can recover the cost of inputs and make some little margin as return, I would sell my products because reaching the good buyers is not easy.”

- iv. *Distance from the Market:* Women must travel long distances to reach market places to sell their ornamental products. Table 9 shows that 50 percent of respondents see this as an obstacle to market participation. One woman said, “I live too far. During rainy season, I cannot go to the market.”
- v. *Communication Barrier:* A large number of women speak Maasai, some little Kiswahili, but they seldom speak English. Communication is an important factor in the promotion and commercialization of goods (Table 9). Language barriers constrain women’s participation since they are unable to negotiate on their own, thus using middlemen who sometimes take advantage of their ignorance. Around 44 percent of women pointed out communication as a hindrance to their market participation. This is for both Kiswahili and English language fluency, on top of little connectivity to the potential domestic and foreign markets participants. One woman talks about the risks involved with using a translator, saying, “I could make much better gains if I negotiated myself. I have to ask an intermediary to speak for me when I get a customer who speaks English ... but it is possible that he/she may not act in my interest.”
- vi. *Technology Limits Productivity:* Maasai women do their work by hand using simple tools. Referring to Table 9, 40 percent of respondents indicated technology as a deterrent to women’s productivity. Production of ornamental goods is time-consuming and inefficient following other roles women must assume concurrently. There is no technological change observed over time since Maasai people have remained quite traditional. Using advanced tools or simple machines would enhance the productivity of women in this sector.

- vii. *Other Factors Limiting Market Participation:* Other factors that were mentioned by a reasonable proportion of women include educational barriers (22 percent) and the dishonesty of middlemen (16 percent). In a traditional perspective, training children and relatives is encouraged and practiced (Table 14).

Knowledge transfer	Number	Percent
Encouraging Others to Produce	90	98
Succession Plan Available	83	90
Transfer of Knowledge		
Training	16	18
Attachment	72	82
Recipients of Transferred Knowledge		
Children	75	87
Relatives	23	27
Others	2	2

Note: Numbers and proportions are out of 91 respondents who answered a question on education and knowledge transfer

Table 14: Maasai Women Training and Knowledge Transfer

Indigenous women are largely trained through artisanship (72 percent of women use this method). Some women are taught how to do such activities in systematic Maasai cultural training. Knowledge and skills are sustained through continuous learning and practice in the community. Almost all women (98 percent) encourage others to learn and produce Maasai body ornamental products. Approximately 90 percent of them have traditional succession plans of production of ornamental products; particularly, the plans to pass down their knowledge.

4.2.4 Scaling Up Production, Commercialization, and Marketing

The last research question concerned the ways to scale up production, commercialization, and marketing of indigenous Maasai women's ornamental products for higher income and job creation. This question was answered using a variety of sources, including literature and analytical field data. Major issues that need to be addressed across the study include: knowledge and technology used, harnessing the power of information, assuring good quality products and market access, resetting the view on indigenous knowledge products as instrumental in women's employment and income in rural areas, reorganizing women to beat competition and getting fair deals, and guaranteeing effective demand for products. To address these issues there is a wide scope of actions to be taken, including adopting strategic and policy strategies for effective outcomes.

On knowledge and technology, the study shows a disconnect between indigenous knowledge training and modern Western education. The findings show that more than 50 percent of the interviewed women did not attend formal Western schools. Instead, they depended on cultural training and knowledge transfer mechanisms for knowledge. While this works in the context of cultural heritage, there is a large gap in

terms of formal and cultural learning. If traditional Maasai women received formal education and combined those skills with cultural learning to execute their production, they would make higher incomes and increase employment in the indigenous ornamental products sector. Only a few women engaged in the production and marketing of ornamental products received secondary education. Strikingly, no women received tertiary education in this sector. Implementing education policies that mesh cultural skill training sessions into the formal school's curriculum can be helpful in attracting Maasai children to formal education since they are not required to abandon their values. Schools located in Maasai land can include training sessions for indigenous skills training to students in different dimensions/specialties in the curriculum. If traditionalists are cognizant of the school motivation and there is no repeal of useful traditional information, this may encourage children to join schools. Using this method, education becomes more attractive to indigenous people. Otherwise, they see formal education as a complete conversion from their traditional lifestyles despite the obvious benefits of education. The survey results show that the average income of Maasai women without formal education was Tsh. 95,958 per month, while those with primary and secondary education was Tsh. 113,158 and Tsh. 148,333 per month, respectively. This indicates some additional dividend of formal education that accrues to women and the higher the level of formal education they attain. This also supports a combination of synergies between formal and indigenous knowledge.

Issues pertaining to quality, occupation, and market access are integral to commercialization and marketing of goods, which leads to higher income and employment levels. Maasai women cannot accomplish commercialization and marketing on their own. The study reveals that marketing is done by word of mouth at sale points, which are largely on the roadsides and in tourist centers in neighboring locations. Awareness must be raised about Maasai ornamental products in export markets. Maasai women may not be able to organize themselves in cooperatives that manage formal organizations necessary to their market access. Policies that establish marketing cooperatives for Maasai women help them engage together in the production, commercialization, and marketing of their products.

The quality of goods plays a big factor, especially in environments where competition is harsh. It's important to note that Maasai body ornamental products are competing with similar goods. If women do not produce high quality products, they will not attract potential buyers based on customer satisfaction. Although none of the sellers of the products perceived products as of low quality, 33 percent observed the goods were of moderate quality. Improving the quality of products will increase wider commercialization and marketing. However, improving quality requires an enhanced sophistication that comes from education, skills, and market exposure.

Changing the view on indigenous products to be important for women's employment and income in the rural areas is central to scaling up the production, commercialization, and marketing of the products. The stigma of indigenous products in the domestic market greatly affects sales. It is the country's responsibility to uphold the domestic treasury of endowed knowledge to unlock opportunities for its people. The central point is not whether indigenous knowledge is inferior or superior, but it is about its contributions. Home products are revered through the purchase and use of them. This mindset relates such

products are good and worthwhile for consumption, and they can benefit the people. These products can also serve as a symbol for the national attire if Tanzanians see the value of identity and potential benefit from innovation that has already existed in the country.

5.0 Concluding Remarks and Policy Implications

5.1 Conclusion

The study focused on the commercialization and marketing of indigenous body ornamental products. The motivation of the study was centred on the desire to find ways to unlock and increase employment opportunities for rural women through the available indigenous knowledge and technology. The paper does not embrace indigenous knowledge as superior to modern knowledge, but instead upholds IK as more accessible and cheaper. IK is also responsible for higher levels of productivity, employment, and income of rural women. Indigenous knowledge and modern Western knowledge are complementary to each other since they address different subjects.

The findings show that Maasai ornamental products can be a lucrative business opportunity for Maasai women despite the fact there has been little commercialization and marketing of those products. Marketing information for IK products is limited, and penetration into the market remains shallow. Regression results show that domestic individuals make up a significant part of the income from Maasai women's retail. Nonetheless, switching to export (tourist) markets has a high potential for additional earnings. Although the quality of goods is generally satisfactory, none of the marketing strategies used by Maasai women have been good enough to increase their incomes. Most shops that sell Maasai ornamental products are located in urban areas, sellers interact with tourists and external market dealers, and the sellers/traders attribute more importance to foreign buyers than domestic buyers. There is a high potential of exporting Maasai ornamental products for the sellers, but women who work individually, and without institutional facilitation of economies of scale and gains from the export market, cannot penetrate the market.

Most Maasai women don't sign contacts with large traders/middlemen or use organizations like cooperatives to purchase and distribute their products, which means the likelihood of selling goods at attractive prices is reduced. The marketing method used is largely based on convincing the people they meet to purchase their products by word-of-mouth; this implies that women's outreach is constrained by marketing information. Productivity is strained by specialization in the production of body ornamental products since women producers are engaged in too many other socio-economic activities in their communities.

Middlemen and traders are not effective in helping the women penetrate the market because they can take advantage of them. Women typically do in-person deals. There are positive effects on women's income if goods are delivered through traders centered in market places. Shifting from other sales methods to formal trading would raise income substantially as well.

There are several other factors limiting the participation of Maasai women in the production and marketing of ornamental products, including: lack of security of jobs as there are no production or sales contracts; absence of sound marketing strategies; low price disincentives, owing to inadequate women's bargaining power and limited exposure; and geographical difficulties related to distances from the market. Others include communication barriers, resistance towards technology improvements for equipment and tools, and knowledge sustained through continuous traditional learning and practice in the community. In contrast, there is minimal linkage between formal education and indigenous training.

An array of ways to scale up production and marketing of indigenous Maasai ornamental products includes the need to address issues of: knowledge and the technological gap through education and training in a manner that can link indigenous knowledge and formal Western education, and assisting women's organization to help them get fair deals in the market through cooperatives and other initiatives that can guarantee effective demand for their products. Resetting the mindset towards indigenous knowledge products is important for employment and income in rural areas to scale up production, commercialization, and marketing of the products.

5.2 Policy Implications

Policy implications to the development stakeholders resulting from the findings of this study are stated below:

- i. Establish marketing cooperatives to help women access wider markets. Cooperatives will disseminate market information, attain collective bargaining, and increase feasibility within and outside the country.
- ii. Organize women in specialized production groups to raise efficiency and increase productivity and income.
- iii. Establish distribution centers/points for Maasai women to sell their products at designated places (in urban and satellite locations) as a way to avoid the exploitation of middlemen.
- iv. Encourage the use of contracts to bridge the financing gap because prospective buyers can advance seed funding to women and assure market for their products at good prices.
- v. Create better roads to shorten travel time to/from the market and ensure the effective flow of goods and services.
- vi. Provide adult language education to unlock communication barriers in the Maasai community. Basic business communication skills (in Kiswahili and English) can help women negotiate transactions themselves.
- vii. Integrate cultural-skills training into the formal schools located in Maasai communities to attract children to the schools. This will guarantee the retention of good cultural values even when children attend formal schools. It will also help children blend and harness skills to improve the production of indigenous products, *inter alia*.
- viii. Raise awareness about Maasai body ornamental products by exhibition and promotion in export markets.

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- ix. Encourage people to purchase indigenous knowledge products, hence increasing the employment and income of the producers.

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