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The Economic Impact of Women

Women Empowerment in Rural Zambia

Highlights

Analysis of the Secondary Sector

Increase the Profitability of EPC Projects

Discovering Thoughts, Inventing Future

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Assessment of the Key Indicators and Dimensions of Women Empowerment in Rural Zambia

By Anthony Abaidoo

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Assessment of the Key Indicators and Dimensions of Women Empowerment in Rural Zambia

Anthony Abaidoo

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I. Introduction

Women empowerment is still a vital concern in global discussions and remains deeply rooted in every society. This is because women empowerment play a critical role in ending extreme poverty (World Bank, 2014) and women's contribution could increase global GDP by US$28 trillion by 2025 (Abney & Laya, 2018). Additionally, women devote substantial percentage of their budget to household benefits such as nutrition, health and education than men (Abney & Laya, 2018; Asaolu et al., 2018; The Hunger Project, 2014) and the entire society benefits when women are employed (International Monetary Fund, 2018). Notwithstanding the significant contributions of women towards individuals, families and global economies, they lack behind on so many indicators as compared to men. For example, the 2018 global labour force participation rate for women was 48.5 percent, which is 26.5 percent less than men (International Labour Organization, 2018); and they earn only 77 percent of what men earn even though they work longer hours than men when paid and unpaid work is taken into account (UN Women, 2018).

The United Nations through several initiatives such as Commission on Status of Women – 1946, Beijing Declaration and Platform for Action – 1995, Millennium Declaration Goal 3-2000 and UN Women – 2010 have helped to provide the appropriate framework for women empowerment (UN, 2019) but the problem still lingers especially in rural part of Sub-Saharan Africa (Asaolu et al., 2018). Plethora of studies within this region have confirmed that sexual abuse and violence against women still persist (Asaolu et al, 2018; Peterman et al., 2015; Dako-Gyeke, 2013; Waltermaurer, 2012). In Zambia, women face economic, emotional and physical abuse challenges. Reported cases of sexual, emotional and physical abuse increased from 31.3% in 2014 to 32.3% in 2018 and the number of girls married at the age of 15 years was 9.6% in 214(Zambia Statistic Agency, 2019). Studies have found that women empowerment in Sub-Saharan Africa could be accelerated if women are given the equal financial opportunities and the necessary support to exercise control over important assets such house, income and land (Asaolu et al, 2018; World Bank, 2017). At the 2017 Boosting Women's Economic Empowerment, it was emphasized that Sustainable Development Goal (SDG) 5, can only be achieved by 2030 if government and stakeholders demonstrate high levels of commitment (UN, 2017). This study is therefore conducted to assess the critical indicators and dimensions for women empowerment in rural Zambia.

II. Methodology

a) Source of Data

The data used in this study was extracted from the 2018 Zambia Demographic and Health Survey (ZDHS) which accessible via https://dhsprogram.com/data/dataset/Zambia_Standard-DHS_2018.cfm?flag=1. DHS is conducted primarily to provide guidance for policy decision making and its implementation with emphasis on health indicators such as awareness and use of family planning; breast feeding practices; nutritional status of children; and early childhood and maternal mortality. The 2018 ZDHS is the sixth round and the data was collected from July 18, 2018 to

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January 24, 2019; with the aim of providing current update on basic demographic and health indicators (Zambia Statistics Agency and Ministry of Health, 2019). Using two-stage stratified sample design, 545 clusters were selected across the country and 13,625 households were also selected through equal probability systematic sampling. The sample size for individual women was 13,683 but the data was stratified to select 8,170 rural women from the ten geopolitical zones.

b) Measurement of Women Empowerment

i. *Women Empowerment*

Several authors have given different definitions of women empowerment. These definitions differ in terms of the context in which women empowerment is being used; being it economic, political or socio-cultural. For example, Kabeer (1999) describes women empowerment as a process where those (women) who were denied certain strategic choices are being given the ability to make those strategic decisions. Similarly, Veneklasen and Miller (2002) posits that women empowerment is the process where women's power to take strategic decision is enhanced. In this study, women empowerment has been contextualized to mean agency and autonomy and it is viewed as a multi-dimensional process.

ii. *Measurement*

Realistic and good measurement serves as the bedrock for assessing women empowerment. However, researchers have adopted different measurements especially the scaling which makes comparison difficult (Lombardini, Bowman, & Garwood, 2017; Biswas, 2004). For example, Huis, Hansen, Otten and Lensink (2017) measured women empowerment from three dimensional levels, micro-level, meso-level and macro-level. Lombardini, Bowman, and Garwood, (2017) also adopted three by focusing on individual, relational and environmental levels. Some studies have also adopted four dimensions, economic, socio-cultural, education and health to measure women empowerment (Asaolu et al., 2018; Pratley, 2016; Jennings et al., 2014).

To ensure standardization and comparison majority of studies (Oluwakemi & Amaka, 2020; Ayevbuonwan, Popoola & Adeoli, 2016; The Hunger Project, 2014; Alkire et al., 2013) have now adopted the multi-dimensional poverty index methodology developed by Alkire and Foster (2007; 2011). This study adopted the Alkire-Foster (2007) methodology.

iii. *Alkire-Foster Methodology*

This method involves two steps: Identification (p_k) and aggregation methods. Whiles the identification method reveals who is empowered by considering the factors that leads to the empowerment, the aggregation method generates a set of disempowerment measures (M_α) which can be disaggregated to target the most empowered. The aggregation method follows Foster Greer and Thorbecke (1984) traditional measures.

From the above, let $y=(y_{ij})$ with $n\times d$ matrix of achievement. Where n is the number of respondents and d is a measure for the number of dimensions; $y=(y_{ij})$ shows the achievement of respondents $i=1,2,...n$ in j dimensions of $j=1,2,....d$. The list of respondent's achievements and the distribution of respondent's achievement across various respondents is represented by the row vector $(y_i=y_{i1}y_{i2}...y_{id})$ and column vector $(y_j=y_{1j}y_{2j}...y_{nj})$ respectively.

Additionally, the cut off for disempowered respondents is represented by $Z_j>0$ in the j dimension and Z is the specific cut off dimension vector. Let $|V|$ be the sum of all elements and $\mu(V)$ represent the mean of $|V|$.

With a given level of achievement define by matrix y, it is possible to define matrix $g_0[g_{ij}0]$ with element $g_{ij}0$ also defined by $g_{ij}0=1$ only if $y_i<Z_j$ and $g_{ij}0=0$. This implies that $g_{ij}0=0$ is a $n\times d$ matrix with an $_{ij}th$ matrix $=1$ when respondent is empowered and for 0 otherwise.

From the aforementioned the column vector c for empowerment count can be constructed with $_ith$ entry as $c=|g_i0|$. This expression represent the level of empowerment enjoyed by the respondent.

Following Alkire-Foster (2007) once again, to identify the disempowered respondents, the vector c which represent disempowered count is compared to the cut of k (where $k=1...d$). This implies that p, which is the identification step, can now be defined as $p_k(y_i z)=1$; when $c_i<k$, $c_i\geq k$, and $p_k(y_i z)=0$. For respondents who are disempowered in multiple dimensions, their identification step is defined as $z_k=\{i:p_k(y_i z)\}$.

The p_k has been labeled as dual cutoff by Alkire-Foster because it tackles within cutoff dimensions (Z_j) and across cutoff dimensions (k). This enable us to determine respondents who are multi-dimensionally disempowered.

In applying the Alkire-Foster methodology, there is a need to first apply the Head count ratio $H=H(y;z)$. This is defined as $H=q/n$. Where H is the percentage of disempowered respondents or the Head count ratio; and $q=q(y,z)$ represent the number of respondents in set Z_k, which is identified by using the dual cutoff method p_k.

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According to Alkire-Foster (2007), the percentage of disempowered respondents (H) should be adjusted by the respondent's average number of achievements. By implication, ck is defined as the disempowered censored vector so that if $c_i < (k)$ then $c_i(k) = 0$ and if $c_i \geq k$ then $c_i(k) = c_i$.

Per the p_k dual cutoff method, $c(k)$ number of categories will always represent one of the disempowered respondents. If this assumption holds, respondents experience within the shared dimensions will be $c_i(k)/d$ and $A = |c(k'qd)|$ will be the average disempowered shared dimensions across the respondents.

If we put emphasis on the disempowered, the final head count ratio which satisfies the properties of decomposability can be captured as $M_0 = HA$. Where $M_0(y;z)$ is the adjusted head count ratio and it satisfies dimensional monotonicity. This is because with any additional dimension, A increases when a rural respondent is disempowered.

iv. *Computation of Women Empowerment Index (WEI)*

The WEI computation was done by following Alkire et al., (2013). WEI is a composite index used to measure the progress of women empowerment in a multidimensional context (The Hunger Project, 2014); and it compares women achievement as a factor of men's achievement. WEI comprises of five key domains (5DE): Agency, Income, Leadership, Resources, and Time.

WEI has two major components: Gender Parity Ratio (GPR) and Women Achievement Ratio (WAR). The GPR is a measure that compares women's achievements to men within the same community while WAR measures women's achievements based on some defined goals and targets (Alkire et al., 2013).

As indicated earlier, scoring is major challenge in comparing women empowerment across different communities and countries. With WEI, the score is computed at the aggregate level to assess the overall level of women empowerment. The five domains (5DE) used in the computation is assigned equal weights. Each domain is assess by using two to three data points. Table 1 below present contextualized five domains and borrowed scoring from Alkire et al., (2013).

Table 1: Five domains of women empowerment and their weights

#	Domains	Indicators	Weights
1	Agency	• Decision making to hospital by women was used as a proxy against men. • Decision making on large household purchases by women was used as proxy against men. • Perception of violence against women	7 7 6
2	Income	• With ownership over business/occupation, women's personal business, works for family and other people was used as indicators. • Financial control was assessed by using control over earnings/income.	10 10
3	Leadership	• Women membership in community discussion/groups was assessed by using ownership of house since such women will be members of landlord associations. • Confidence of being comfortable speaking in public was assessed with women's ability discuss family planning with health workers.	10 10
4	Resources	• Minimum number of prenatal care visits • Literacy rate	10 10
5	Time/Workload	• Time spent to access to water (source of water) • For workload, type of cooking fuel was used as an indicator as well as division of household chores.	10 10

Source: Author's Own Construct (July 2020) with adaptation of weights from Alkire et al., (2013)

According to the Hunger Project (2014), the overall WEI can be computed as:

$$WEI = \sum_{i=1}^{11} [(0.6 \times WAR_i + 0.4 \times GPR_i) \times weight_i]$$

However, this study adopted Alkire and Sabina et al (2012) methodology in estimating the overall WEI. Per their method, the WEI is estimated as:

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$$\text{WAR or 5DE} = H_e + H_{ne} * A_e$$

H_e = % of women who are empowered

H_{ne} = % of women who are not empowered (1-H_e)

A_e = the average absolute empowerment score among the disempowered

Alternatively, 5DE can or WAR can be estimated by using: $M_0 = H_{dp} * A_{sm}$

Where H_{dp} is the multidimensional deprivation headcount ratio and A_{sm} is the average percentage of simultaneous deprivations suffered by the disempowered. Based on this, $5\text{DE} = 1 - M_0$;

Where M_0 is the multidimensional disempowerment. The Gender Parity Index (GPI) is also estimated as:

$$GPI = 1 - HGPi \times IGPi$$

From the above:

HGPi is the percentage of gender parity inadequate households;

IGPi is the average empowerment gap between women and men living in the household that lack gender parity.

The overall WEI is therefore: 0.6(5DE) + 0.4(GPI)

Although the overall WEI is 100(Hunger Project, 2014), 80 was used as the threshold for this study. This implies that women with at least 80 score indicates higher degree of women empowerment within the community.

v. *Explanation of the computation of the five domains*

The five domains (5DE); Agency, Income, leadership, Resources and Time/Workload was estimated by using 11 indicators.

a. *Agency*

This was computed by using three indicators: decision on visit to hospital; decision on household purchases; and perception on violence. The indicators were coded as 0 and 1 with 1 representing sole or joint decision on particular indicator and 0 for otherwise. A respondent who partake in sole or joint decision (i.e., value of 1) is considered empowered.

b. *Income*

Income was assessed with two indicators: women ownership to a business and decision on control of earnings. Similarly, this domain was coded as 1 and 0, where 1 shows sole or joint decision and 0 otherwise. A respondent who partake in sole or joint decision (i.e., value of 1) is considered empowered.

c. *Leadership*

Women's leadership was based on tow indicators: ownership of house since such women will part of a group of landlord association; and discussion about family planning with health workers. This also measures the woman's confidence level. The indicators were coded as 0 and 1 with 1 representing sole of joint ownership of house; and the same coding to represent with 1 indicating yes if respondents had a discussion with health worker on family planning and 0 for otherwise. A respondent who has sole or joint ownership of house (i.e., value of 1) and also discus family planning with health worker (i.e., value of 1) is considered empowered.

d. *Resources*

Literacy rate and minimum number of prenatal care visit was the two indicators used to estimate women's resources. A value of 1 was used to represent respondent's ability to read or write and 0 for otherwise. The same value of 1 was used to indicate yes for respondents who cared about their health and went for prenatal care visit and 0 for otherwise. For each indicator, a respondent is empowered with a value of 1 and 0 for otherwise.

e. *Time/workload*

The type of cooking fuel and time spent to access water were used as the two indicators for this domain. Women who used traditional cooking fuel like wood are likely to spend more time cooking hence the code 0 and 1 for improved cooking fuel like gas or electric. Respondents who spend less than 30 minutes to access water were coded as 1 and 0 for otherwise. For each indicator, a respondent is empowered with a value of 1 and 0 for otherwise.

c) Empirical Model

In order to assess the determinants of women empowerment in this study, the probit and logit model was adopted.

The general regression model is given by:

$$f(W_{emp}) = f(Sex_{HH}, W_{edu}, W_{age}, W_{ms}, W_{occ}, \text{Re}l, Wel_i, H_{age}, H_{edu}, \text{Re}g)$$

The specific probit model is:

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$$p\left(\frac{p_r(y_i=1|xi)}{1-p_r(y_i=1|xi)}\right)=p(W_{emp})=\beta_0+\beta_1 Sex_{HH}+\beta_2 W_{edu}+\beta_3 W_{age}+\beta_4 W_{ms}+\beta_5 W_{occ}+\beta_6 \mathrm{Re}l+\beta_7 Wel_i+\beta_8 H_{age}+\beta_9 H_{edu}+\beta_{10}\mathrm{Re}g+\varepsilon$$

The specific logit model is:

$$\ln\left(\frac{p_r(y_i=1|xi)}{1-p_r(y_i=1|xi)}\right)=\ln W_{emp}=\gamma_0+\gamma_1 Sex_{HH}+\gamma_2 W_{edu}+\gamma_3 W_{age}+\gamma_4 W_{ms}+\gamma_5 W_{occ}+\gamma_6 \mathrm{Re}l+\gamma_7 Wel_i+\gamma_8 H_{age}+\gamma_9 H_{edu}+\gamma_{10}\mathrm{Re}g+\varepsilon$$

The variables are explained in Table 2 below:

Table 2: Explanation of variables

Variables	Definition
Wemp	This is the dependent variable and it represent Women empowerment; Empowerment = 1 and 0 if otherwise
Independent variables	
SexHH	Sex of head of household; 1=female and 0 if otherwise
Wedu	Woman's level of education measured in years
Wage	Age of women in years
Wms	Marital status for women; 1 = married and 0 if otherwise
Wocc	Occupation for women; 1 = employed and 0 if otherwise
Rel	Religious background: 1 = Christianity and 0 if otherwise
Weli	Wealth index; this was categorized into poorest, poorer, middle richer. Poorest: 1 = poorest and 0 if otherwise poorer: 1 = poorer and 0 if otherwise middle: 1 = middle and 0 if otherwise richer: 1 = richer and 0 if otherwise
Hage	Husband's age measured in years
Hedu	Husband's level of education in years
Reg	Region; this was based on the ten region

Source: Author's Own Construct (July 2020)

III. Results and Discussion

a) Descriptive Statistics

Table 1 presets the descriptive statistics for the indicators of women empowerment. Frequencies and percentages were used in the study. On decision to health care, the pooled results showed that 76.23 percent of women take such decision with their spouse. Only 23 percent of their spouses take the decision alone. This result was consistent across all the ten regions in rural Zambia. The implication is that women in rural Zambia are empowered when it comes to decision on their health care. This confirms Habtamu (2014) who found that women play a vital role on decision of their healthcare. Similarly, 62.81 percent of decision on large household purchases was taken jointly by women and their spouses. This is in contrast with Obayelu and Chime (2020) who found that women have less autonomy on decision on large household purchases. The findings was consistent across all the ten region with the exception of Eastern region where 51.9 percent of decision on large household purchases are taken by only husband/partners. Women within this region have less autonomy on this indicator hence confirms Obayelu and Chime (2020) results. Apart from Luapula, women across the other nine regions frowned on domestic violence against them. From the pooled results, 65.08 percent didn't justify beating based on going out without telling husband; 60.73 percent didn't justify beating based on neglect of child; 58.30 percent on argument with husband; 60.13 percent on failure to have sex with husband; and 69.89 percent didn't justify beating based on burning food. Generally, it is expected that majority of women wont justify any form of domestic violence since it infringes pain on them and also have health consequences.

Majority (72.66%) of women operated their own business and only 27.34 percent operated business for someone else. Moreover, 72.72 percent of women jointly took decision on earning with their spouse and 24.28 percent was taken solely by their spouses. Since only 24.28 percent of women spouses takes sole decision on earning, women in Zambia play a vital role in decision on their earning. This is consistent with Obayelu and Chime (2020) who reported that 79 percent of women make join decision on earning with their spouses in rural Nigeria. Additionally, 55.82 percent of the rural women in Zambia do not own a house whiles 1.77 percent of their

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spouses own a house. Ownership important asset such as a house is a problem in rural Zambia for women. Their ability to possess such important asset will enhance their empowerment level.

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Table 1: Indicators of women empowerment by region

Region Indicators	Central	Copperbel	Eastern	Luapula	Lusaka	Muchinga	Northern	North West	Southern	Western	Pooled
Agency/Autonomy											
Decisions on health care											
husband/partner alone	102 (17.89)	42 (14.53)	295 (38.31)	137 (23.54)	32 (9.82)	144 (26.04)	107 (19.21)	34 (9.09)	175 (31.42)	115 (28.82)	1183 (23.77)
Jointly/alone	468 (82.11)	247 (85.47)	475 (61.69)	445 (76.46)	294 (90.18)	409 (73.96)	450 (80.79)	340 (90.91)	382 (68.58)	284 (71.18)	3794 (76.23)
Decision on large household purchase											
husband/partner alone	156 (27.27)	72 (24.91)	396 (51.90)	279 (47.53)	46 (14.11)	249 (45.27)	170 (30.47)	43 (11.50)	278 (49.91)	161 (40.35)	1850 (37.19)
Jointly/alone	416 (72.73)	217 (75.09)	367 (48.10)	308 (52.47)	280 (85.89)	301 (54.73)	388 (69.53)	331 (88.50)	279 (50.09)	238 (59.65)	3125 (62.81)
Perception on violence											
Beating is justified if wife goes out without telling husband											
Yes	246 (27.64)	178 (34.30)	193 (17.59)	504 (53.90)	57 (11.85)	389 (46.87)	427 (52.14)	233 (32.09)	307 (35.25)	238 (30.19)	2772 (34.92)
No	644 (72.36)	341 (65.70)	904 (82.41)	431 (46.10)	424 (88.15)	441 (53.13)	392 (47.86)	493 (67.91)	564 (64.75)	532 (69.09)	5166 (65.08)
Beating is justified if neglect children											
Yes	267 (29.73)	206 (39.77)	289 (26.15)	555 (58.92)	89 (18.31)	435 (52.03)	471 (57.44)	209 (28.75)	323 (37.13)	288 (37.21)	3132 (39.27)
No	631 (70.27)	312 (60.23)	816 (73.85)	387 (41.08)	397 (81.69)	401 (47.97)	349 (42.56)	518 (71.25)	547 (62.87)	486 (62.79)	4844 (60.73)
Beating is justified if argue with husband											
Yes	321 (35.19)	262 (50.38)	270 (24.57)	652 (69.29)	89 (18.28)	470 (55.82)	507 (61.75)	232 (31.74)	249 (28.62)	276 (35.57)	3328 (41.70)
No	573 (64.09)	258 (46.62)	829 (75.43)	289 (30.71)	398 (81.72)	372 (44.18)	314 (38.25)	499 (68.26)	621 (71.38)	500 (64.43)	4653 (58.30)

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Table 1 continued

Region Indicators	Central	Copperbel	Eastern	Luapula	Lusaka	Muchinga	Northern	North West	Southern	Western	Pooled
Beating is justified if refuse to have sex with husband											
Yes	254 (28.73)	231 (46.20)	238 (22.02)	634 (68.17)	97 (20.17)	439 (53.67)	457 (58.14)	223 (30.67)	273 (31.52)	282 (36.48)	3128 (39.87)
No	630 (71.27)	269 (53.80)	843 (77.98)	296 (31.83)	384 (79.83)	379 (46.33)	329 (41.86)	504 (69.33)	593 (68.48)	491 (63.52)	4718 (60.13)
Beating is justified if burn food											
Yes	159 (17.69)	145 (27.78)	165 (14.93)	492 (52.23)	31 (6.34)	364 (43.08)	427 (52.07)	197 (26.95)	183 (20.94)	248 (31.79)	2411 (30.11)
No	740 (82.31)	377 (72.22)	940 (85.07)	450 (47.77)	458 (93.66)	481 (56.92)	393 (47.93)	534 (73.05)	691 (79.06)	532 (68.21)	5596 (69.89)
Income/assets											
Operating business for someone else	186 (37.73)	53 (19.92)	238 (35.47)	188 (30.32)	80 (38.83)	39 (11.40)	45 (10.11)	43 (12.32)	184 (40.17)	125 (26.65)	1181 (27.34)
self-employed/own business	307 (62.27)	213 (80.08)	433 (64.53)	432 (69.68)	126 (61.17)	303 (88.60)	400 (89.89)	306 (87.68)	274 (59.83)	344 (73.35)	3138 (72.66)
Decision on earnings											
husband/partner alone	33 (12.45)	20 (12.82)	110 (33.33)	84 (29.68)	13 (9.09)	75 (33.19)	25 (10.78)	21 (21.00)	80 (34.93)	52 (34.90)	513 (24.28)
Jointly/alone	232 (87.55)	136 (87.18)	220 (66.67)	199 (70.32)	130 (90.91)	151 (66.81)	207 (89.22)	79 (79.00)	149 (65.07)	97 (65.10)	1600 (75.72)
Own a house											
does not own	513 (56.13)	383 (72.40)	387 (34.65)	450 (46.68)	313 (62.10)	447 (52.59)	392 (45.69)	400 (54.13)	604 (66.74)	441 (55.82)	4330 (53.00)
Jointly/alone	365 (39.93)	108 (20.42)	651 (58.28)	500 (51.87)	145 (28.77)	371 (43.65)	373 (43.47)	329 (44.52)	271 (29.94)	335 (42.41)	3448 (42.20)
husband/partner alone	36 (3.94)	38 (7.18)	79 (7.07)	14 (1.45)	46 (9.13)	32 (3.76)	93 (10.84)	10 (1.35)	30 (3.31)	14 (1.77)	392 (4.80)

Region Indicators	Central	Copperbel	Eastern	Luapula	Lusaka	Muchinga	Northern	North West	Southern	Western	Pooled
Discuss family planning with health worker											
Yes	189 (42.19)	118 (34.91)	514 (55.63)	313 (50.08)	136 (45.95)	222 (39.08)	226 (46.89)	280 (52.83)	269 (41.38)	310 (54.39)	2577 (47.45)
No	259 (57.81)	220 (65.09)	410 (44.37)	312 (49.92)	160 (54.05)	346 (60.92)	256 (53.11)	250 (47.17)	381 (58.62)	260 (45.61)	2854 (52.55)
Literacy rate											
can't read at all	286 (31.29)	222 (41.97)	609 (54.62)	542 (56.22)	192 (38.10)	434 (51.30)	495 (57.89)	331 (44.79)	254 (28.10)	341 (43.16)	3706 (45.42)
able to read part of sentence	175 (19.15)	85 (16.07)	117 (10.49)	121 (12.55)	83 (16.47)	135 (15.96)	96 (11.23)	91 (12.31)	135 (14.93)	118 (14.94)	1156 (14.17)
able to read whole sentence	453 (49.56)	222 (41.97)	389 (34.89)	301 (31.22)	229 (45.44)	277 (32.74)	264 (30.88)	317 (42.90)	515 (56.97)	331 (41.90)	3298 (40.42)
Visited health facility in the last 12 months											
Yes	448 (49.02)	338 (63.89)	924 (82.72)	625 (64.83)	296 (58.73)	568 (66.82)	482 (56.18)	530 (71.72)	650 (71.82)	570 (72.15)	5431 (66.47)
No	466 (50.98)	191 (36.11)	193 (17.28)	339 (35.17)	208 (41.27)	282 (33.18)	376 (43.82)	209 (28.28)	255 (28.18)	220 (27.85)	2739 (33.53)
Time/workload											
less than 30minutes	750 (83.24)	438 (86.05)	857 (82.01)	799 (85.73)	415 (84.87)	674 (82.50)	746 (88.28)	642 (88.92)	693 (77.69)	678 (87.37)	6692 (84.41)
31-60minutes	125 (13.87)	57 (11.20)	158 (15.12)	114 (12.23)	66 (13.50)	120 (14.69)	86 (10.18)	74 (10.25)	144 (16.14)	81 (10.44)	1025 (12.93)
above 60minutes	26 (2.89)	14 (2.75)	30 (2.87)	19 (2.04)	8 (1.64)	23 (2.82)	13 (1.54)	6 (0.83)	55 (6.17)	17 (2.19)	211 (2.66)
Type of cooking fuel											
wood and charcoal	847 (94.01)	491 (96.09)	1074 (98.44)	930 (99.04)	425 (86.73)	817 (100.00)	841 (99.41)	710 (97.53)	870 (97.42)	780 (99.74)	7785 (97.34)
Solar power	7 (0.78)	2 (0.39)	8 (0.73)	1 (0.11)	4 (0.82)	0 (0.00)	0 (0.00)	1 (0.14)	0 (0.00)	0 (0.00)	23 (0.29)
Gas and Electricity	47 (5.22)	18 (3.52)	9 (0.82)	8 (0.85)	61 (12.45)	0 (0.00)	5 (0.59)	17 (2.34)	23 (2.58)	2 (0.26)	190 (2.38)

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Furthermore, 52.55 percent of rural women didn't discuss family planning with health workers. On literacy, 45.42 percent of the rural women can't read at all; 14.17 percent can read part of a sentence and 40.42 percent can read a whole sentence. Again, 66.47 percent of the women have visited health care facility in the last 12 months; and majority (84.41%) of women in rural Zambia use less than 30 minutes to fetch water. Also, almost all the rural women (97.34%) rely on wood and charcoal as a type of cooking fuel.

b) Estimates for Women Empowerment

As presented in section 2.2.4, the computation of women empowerment index in this study is based on the Alkire-Foster (2007) methodology. Women empowerment in this study is measured by using five domains: Agency, Income, Resources, Leadership and Time/Workload. The aggregates of these domains across the various indicators was used to compute the multidimensional women empowerment index. Following Alkire et al (2013; 2011) and Obayelu and Chime (2020), five cut offs were used in this study. Alkire et al (2013) suggested that a respondent's level of deprivation should at least be below a third of the total number of indicators to be considered as poor. They also made a distinction between vulnerable poor and severe poverty by using a cutoff of 20 percent and 50 percent respectively. Based on this the cutoffs for this study is: 20%, 33%, 50%, 66% and 80%.

Table 2: Multidimensional disempowerment index

Disempowerment cut off (k)	Multidimensional disempowerment index (M_0)	Multidimensional disempowerment headcounts (H_0)	Intensity disempowerment (A)	Empowerment index ($1-M_0$)
1	0.347	0.926	0.363	0.653
2	0.224	0.489	0.458	0.776
3	0.178	0.363	0.49	0.822
4	0.010	0.013	0.722	0.990
5	0.001	0.001	0.001	0.999

Source: Authors Own Construct (July 2020)

From table 2 below, at K=1, rural women multidimensional disempowerment (H_0) is 92.6 percent and the intensity of disempowerment is 36.3 percent. The multidimensional disempowerment decreased to 48.9 percent at K=2 and a further decrease to 36.3 percent at K=3. At K=4 and K=5, the multidimensional disempowerment was 1.3 percent and 1 percent respectively. This indicates that there is an inverse relationship between the multidimensional disempowerment index and the cutoff (k). That is, as K increased the multidimensional disempowerment index decreases. Several studies found the inverse relationship (Obayelu and Chime, 2020; Popoola and Adeoti, 2016; Ayevbuomwan et al., 2016; Batana and Duclos, 2008).

i. *Relative contribution of dimensions to women disempowerment*

Out of the five dimensions, time/workload contributed the highest percentage to women's disempowerment at K=1 (31.2%), K=2 (27.3%) and K=3 (26.4%). At K=4, income contributed the highest percent of 22.9% and at the final cutoff (K=5), agency, income and time had the same share of contribution towards women's disempowerment (23.5%). The findings is in contrast with Popoola and Adeoti (2016) who found resource and education as the highest contributor to women disempowerment at K=1 and K=2 respectively.

Table 3: Relative contribution of domains to women disempowerment

Dimensions	Agency (percent)	Income (percent)	Resources (percent)	Leadership (percent)	Time (percentage)
K=1	0.154	0.144	0.246	0.144	0.312
K=2	0.188	0.167	0.227	0.145	0.273
K=3	0.181	0.179	0.231	0.145	0.264
K=4	0.196	0.236	0.229	0.132	0.208
K=5	0.235	0.235	0.176	0.118	0.235

Source: Authors Own Construct (July 2020)

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c) Women's disempowerment by region and gender

Out of the ten regions, Eastern contributed the highest percentage (17.9%) to women's disempowerment, followed by Southern (12.3%) and Muchinga (12.0%). The least contributor to women's disempowerment was North West (5.1%).

Table 4: Women disempowerment by region (K=2)

	Absolute contribution				Relative contribution			
Region	M_0	H_0	A	$1-M_0$	M_0	H_0	A	$1-M_0$
Central	0.307	0.889	0.345	0.693	0.088	0.092	0.957	0.912
Copperbel	0.344	0.943	0.365	0.656	0.072	0.071	1.014	0.928
Eastern	0.335	0.915	0.366	0.665	0.180	0.179	1.006	0.820
Luapula	0.350	0.948	0.369	0.650	0.134	0.132	1.015	0.866
Lusaka	0.283	0.894	0.317	0.717	0.048	0.055	0.873	0.952
Muchinga	0.340	0.916	0.371	0.660	0.120	0.118	1.017	0.880
Northern	0.327	0.943	0.347	0.673	0.092	0.096	0.958	0.908
North West	0.297	0.921	0.322	0.703	0.045	0.051	0.882	0.955
Southern	0.358	0.960	0.373	0.642	0.126	0.123	1.024	0.874
Western	0.382	0.921	0.415	0.618	0.096	0.084	1.143	0.904

Source: Authors Own Construct (July 2020)

With respect to gender, men's contribution to women's disempowerment was very high (91.7%). Only 8.3 percent of women contribute to women disempowerment. Obayelu and Chime, (2020) and Popoola and Adeoti (2016) also had similar results in rural Nigeria.

Table 5: Women's disempowerment by gender of household head at k=2

Gender	M_0	H_0	A	$1-M_0$
absolute contribution				
Men	0.226	0.493	0.458	0.774
Women	0.199	0.422	0.472	0.801
Relative contribution				
Men	0.918	0.917	1.001	0.082
Women	0.082	0.083	0.988	0.918

Source: Authors Own Construct (July 2020)

d) Women empowerment and disempowerment index based on socio-economic characteristics

Women within the age bracket of 15-20 years are disempowered than those with 21-30 years. Similarly, those with 40-49 years are empowered than those within 31-40 years. Cumulatively, women within the age bracket of 21-40 years had the highest level of empowerment (71.1%). This category of women falls with the active population group and also working age hence are more likely to be empowered than their counterparts. The findings is in line with Oriana (2014) results. Secondary (14.9%) and higher (2.1%) forms of education contributed the least to women disempowerment. Primary education was the highest contributor to women disempowerment. Abaidoo (2020) opined that higher forms education improves human capital thereby reducing level of poverty. Consequently, women with higher level of education are more likely to have the requisite skills and to be gainfully employed for better income. Married women are more empowered than unmarried women. Additionally, poorest and poorer women contributes 34.3 percent and 32.7 percent respectively to women disempowerment.

Furthermore, households with household size within 5-8 members had the highest level (60.1%) of women empowerment. Pit/latrine as a type of toilet facility was the highest contributor to women disempowerment (77.7%); followed by no facility (20.7%). Majority of the empowered women (52.8%) were into farmers, followed by sales (26.3%) and professionals (6.9%). This implies that women in rural areas are more empowered when they engage in the primary activity (agriculture) that yields income within their community. The least contributor to women empowerment was clerical (0.1%). This is line with Obayelu and Chime, (2020) who reported similar results in rural Nigeria as well as. They found that clerical contribute only 0.12 percent towards women empowerment in rural Nigeria. Oriana (2014) also had similar results.

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Rural women with river/dam/spring/rain as source of drinking water contributed 58.7 percent to women empowerment, followed by those with tube well or borehole (31.0%) and pipe borne water (10.2%). The least contributor was tanker (0.1%).

Table 6: Distribution of women empowerment index based on socio-economic characteristics

Variables	Empowered	Disempowered	Total
Women's age (in years)			
15-20 years	49 (6.4%)	74 (10.1%)	123 (8.2%)
21-30 years	274 (35.8%)	260 (35.6%)	534 (35.7%)
31-40 years	270 (35.3%)	261 (35.7%)	531 (35.5%)
40-49years	172 (22.5%)	136 (18.6%)	308 (20.6%)
Women's highest education level			
No education	50 (6.5%)	99 (13.5%)	149 (10.0%)
primary	441 (57.6%)	508 (69.5%)	949 (63.4%)
secondary	221 (28.9%)	109 (14.9%)	330 (22.1%)
higher	53 (6.9%)	15 (2.1%)	68 (4.5%)
Marital status			
unmarried	5 (0.7%)	1 (0.1%)	6 (0.4%)
married	760 (99.3%)	730 (99.9%)	1490 (99.6%)
Wealth Index			
poorest	209 (27.3%)	251 (34.3%)	460 (30.7%)
poorer	212 (27.7%)	239 (32.7%)	451 (30.1%)
middle	194 (25.4%)	172 (23.5%)	366 (24.5%)
richer	71 (9.3%)	44 (6.0%)	115 (7.7%)
richest	79 (10.3%)	25 (3.4%)	104 (7.0%)
Household size			
1-4	180 (23.5%)	187 (25.6%)	367 (24.5%)
5-8	460 (60.1%)	419 (57.3%)	879 (58.8%)
9-12	113 (14.8%)	103 (14.1%)	216 (14.4%)
above 12	12 (1.6%)	22 (3.0%)	34 (2.3%)
Type of toilet facilities			
flushed/water system	47 (6.1%)	12 (1.6%)	59 (3.9%)
pit/latrine	627 (82.0%)	568 (77.7%)	1195 (79.9%)
No facility/bush	91 (11.9%)	151 (20.7%)	242 (16.2%)
Women's occupation			
professional/technical/managerial	53 (6.9%)	14 (1.9%)	67 (4.5%)
Clerical	1 (0.1%)	1 (0.1%)	2 (0.1%)
Sales	201 (26.3%)	157 (21.5%)	358 (23.9%)
farmer	404 (52.8%)	460 (62.9%)	864 (57.8%)
services	23 (3.0%)	29 (4.0%)	52 (3.5%)
skilled manual	13 (1.7%)	8 (1.1%)	21 (1.4%)
unskilled manual	70 (9.2%)	61 (8.3%)	131 (8.8%)
Source of drinking water			
pipe-borne water	78 (10.2%)	43 (5.9%)	121 (8.1%)
tube well or borehole	237 (31.0%)	233 (31.9%)	470 (31.4%)
river/dam/spring/rain	449 (58.7%)	455 (62.2%)	904 (60.4%)
Tanker/cart with tank	1 (0.1%)	0 (0.0%)	1 (0.1%)

Source: Authors Own Construct (July, 2020)

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e) Determinants of women empowerment

Results from the OLS, probit and logit models are presented in table 7. The results also include the marginal effect for the probit and logit models. All the three models predicted significant negative relationship between women empowerment and women's education in years. From the OLS model, any additional year of education will reduce women empowerment by 19.62%. The probit and logit models revealed with any additional year of education the probability of women empowerment reduces by 53.3 percent and 86.6 percent units respectively. This not consistent with theory as one would expect high form of education to improve women's skills thereby improving their level of empowerment. Obayelu and Chime, (2020), attributed this to traditional African belief when men continue to take major decisions irrespective of the woman's years of education. Marital status had a positive relationship with women empowerment. From the probit model married women are 82.37 percent more likely to be empowered than the unmarried counterparts. The findings is in contrast with Obayelu and Chime (2020), who found a negative significant relationship between marital status and women empowerment. Women's age on the other hand had an inverse significant relationship with women empowerment. The marginal effect from the probit and logit models showed that any additional age obtained by a woman is likely to reduce her level of empowerment by 0.0066 units. This implies that younger women are more empowered that the aged. Whiles the result confirms Obayelu and Chime (2020) findings it conflicts with Popoola and Adeoti (2016) who had a positive relationship between age and women empowerment in Nigeria.

Table 7: Determinants of women empowerment in rural Zambia

Variables	OLS	Probit	dy/dx	logit	dy/dx
Women's education in years	-0.1962 (0.0000)***	-0.5333 (0.0000)***	-0.1987 (0.0000)***	-0.8663 (0.0000)***	-0.1993 (0.0000)***
Women's marital status	0.2943 (0.181)*	0.8237 (0.201)	0.3070 (0.201)	1.3727 (0.227)	0.3158 (0.226)
Women's age	-0.0068 (0.0037)**	-0.0177 (0.040)**	-0.0066 (0.039)**	-0.0290 (0.039)**	-0.0066 (0.038)**
Wealth index					
Poorer	0.0083 (0.815)	0.0232 (0.803)	0.0088 (0.803)	0.0398 (0.791)	0.0093 (0.791)
Middle	-0.0359 (0.362)	-0.0913 (0.379)	-0.0345 (0.379)	-0.1450 (0.387)	-0.0339 (0.387)
Richer	-0.0782 (0.176)*	-0.2056 (0.183)*	-0.0774 (0.181)*	-0.3326 (0.188)*	-0.0774 (0.185)*
Richest	-0.1176 (0.067)**	-0.3671 (0.039)**	-0.1364 (0.035)**	-0.5916 (0.046)**	-0.1355 (0.04)**
Household size	-0.0056 (0.787)	-0.0136 (0.806)	-0.0050 (0.806)	-0.0245 (0.787)	-0.0056 (0.787)
Husband's years of education	-0.0001 (0.926)	-0.0004 (0.922)	-0.0001 (0.922)	-0.0006 (0.927)	-0.0001 (0.927)
Husband's age	0.0022 (0.418)	0.0057 (0.437)	0.0021 (0.437)	0.0095 (0.424)	0.0022 (0.424)
Region					
copperbelt	0.1927 (0.003)***	0.5130 (0.003)***	0.1932 (0.0020***	0.8392 (0.003)***	0.1951 (0.002)***
Eastern	0.0433 (0.422)	0.1084 (0.045)	0.0409 (0.449)	0.1835 (0.430)	0.0428 (0.429)
Luapula	0.0281 (0.627)	0.0734 (0.633)	0.0276 (0.633)	0.1199 (0.632)	0.0279 (0.632)
Lusaka	-0.0666 (0.336)	-0.2115 (0.271)	-0.0772 (0.266)	-0.3264 (0.303)	-0.0733 (0.296)
muchinga	0.0281 (0.623)	0.0717 (0.636)	0.0270 (0.636)	0.1226 (0.617)	0.0285 (0.617)
Northern	0.0131 (0.828)	0.0345 (0.829)	0.0129 (0.829)	0.0553 (0.832)	0.0128 (0.832)
north western	-0.0995 (0.172)*	-0.2959 (0.140)*	-0.1065 (0.131)*	-0.4613 (0.160)*	-0.1020 (0.149)*
Southern	0.2099	0.5555	0.2086	0.9057	0.2098

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	(0.0000)***	(0.0000)***	(0.000)***	(0.0000)***	(0.0000)***
Western	0.1181	0.3043	0.1154	0.5005	0.1175
	(0.065)**	(0.072)*	(0.072)*	(0.070)**	(0.068)*
_cons	0.3339	-0.4837		-0.8246	
	(0.148)*	(0.469)		(0.438)	

*Notes: ***, **, * represent 1%, 5% and 10% significant levels respectively. Log Likelihood = -869.1687, Pseudo R^2 = 0.0593, and Prob > Chi^2 = 0.0000*

From the logit model, women who fall within wealth index of richer are 33.26 percent less likely to be empowered and those within the richest index are 59.16 percent less likely to be empowered. Women who reside in rural Copperbelt are 51.30% (probit) and 83.92% (logit) more likely to be empowered than their counterparts in other regions. Those living in rural Southern Zambia are 55.55 percent (probit) and 90.57 percent (logit) more likely to be empowered than the others from the other regions. In the rural North-Western part of Zambia, the logit results showed that women in those areas are 46.13 percent less likely to be empowered.

IV. Conclusion and Recommendations

The study was conducted primarily to assess the indicators and dimensions of women empowerment in rural Zambia. Findings from the study showed that majority of women make joint decision on their health and larger purchases with their spouse but this is not the case in the Eastern part of rural Zambia. With the exception of Luapula region, majority of women didn't justify any form of violence.

Moreover, a higher percentage of rural women in Zambia are self-employed. This is a good indicator for women economic empowerment and decision on earning. However, majority of them can't read all; do not own a house and use charcoal and wood as cooking fuel. As a result of this, the study revealed that workload/time is the highest contributor to women disempowerment, followed by resources. In terms of gender, men contribute a very high percentage to women disempowerment.

Furthermore, the results from the probit and logit models revealed that women from Copperbelt, Southern and western rural region of Zambia are more likely to be empowered than their counterparts from other regions. Those residing in rural Northern Western were found be less likely to be empowered. The results showed that whiles marital status increase the probability of being empowered, women's age and level of education reduces the probability of rural women in Zambia being empowered.

From the findings, it is evident that rural women in Zambia are disempowered in terms of workload/time and resources. It is therefore recommended that non-formal education should be organized for the rural women with strict monitoring. Also, stakeholders should ensure that formal education for the young ladies in the rural Zambia is intensified. These interventions should target women who can't read at all and more specifically those living in North Western and Eastern regions of rural Zambia.

Additionally, effort should be made to reduce the domestic household chores of rural women. This can be achieved by organizing sensitization programs for both men and women on the need to support each other on household chores. Similarly, intensive sensitization programs should be conducted for the rural women to educate them on their rights and significance of women empowerment.

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The Economic Impact of Women is Greater than that of Men: Analysis of the Secondary Sector with the Input-Output Tables

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Abstract- The present study hopes to clarify the participation of women's work in secondary sector activities, which include those in manufacturing, mining and quarrying, energy subsector and construction; transcending in turn to the measurement of the economic impact or effect in the rest of the sectors in Panama. The methodology involves the use of data from the VI National Economic Census in its volume III called "Miscellaneous economic activities"; as well as the information of the Supply and Use Tables, both presented by the National Institute of Statistics and Census; and the application of impact analysis as part of the methodology of the Input-Output Tables. The results confirm the gender gap considering participation in the labor market; However, women's work is more productive than men's when measuring the impact, considering purchases and investment in each subsector or economic activity in the secondary sector, for the years analyzed in 2007, 2010 and 2015.

Keywords: participation in gender, secondary sector, economic activities, economic impact, indirect employment.

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The Economic Impact of Women is Greater than that of Men: Analysis of the Secondary Sector with the Input-Output Tables

El Impacto Económico de la Mujer es Mayor Que la de Los Hombres: Análisis del Sector Secundario con las Tablas Input-Output

Dr. Reyes Arturo Valverde Batista

Resumen- El presente estudio espera esclarecer la participación del trabajo de la mujer en las actividades del sector secundario, que incluyen las desarrolladas en la industria manufacturera, explotación de minas y canteras, subsector energético y la construcción; transcendiendo a su vez a la medición del impacto o efecto económico en el resto de los sectores en Panamá. La metodología implica el uso de los datos del VI Censo Económico Nacional en su volumen III denominado "Actividades económicas varias"; como también la información de los Cuadros de Oferta y Utilización, ambos presentados por el Instituto Nacional de Estadística y Censo; y la aplicación del análisis de impacto como parte de la metodología de las Tablas Input-Output. Los resultados constatan la brecha en género considerando la participación en el mercado laboral; sin embargo, el trabajo de la mujer en más productivo que el del hombre al medir el impacto, considerando las compras y la inversión en cada subsector o actividad económica en el sector secundario, para los ejercicios analizados de los años 2007, 2010 y 2015.

Palabras claves: participación en género, sector secundario, actividades económicas, impacto económico, empleo indirecto.

Abstract- The present study hopes to clarify the participation of women's work in secondary sector activities, which include those in manufacturing, mining and quarrying, energy subsector and construction; transcending in turn to the measurement of the economic impact or effect in the rest of the sectors in Panama. The methodology involves the use of data from the VI National Economic Census in its volume III called "Miscellaneous economic activities"; as well as the information of the Supply and Use Tables, both presented by the National Institute of Statistics and Census; and the application of impact analysis as part of the methodology of the Input-Output Tables. The results confirm the gender gap considering participation in the labor market; However, women's work is more productive than men's when measuring the impact, considering purchases and investment in each subsector or economic activity in the secondary sector, for the years analyzed in 2007, 2010 and 2015.

Keywords: participation in gender, secondary sector, economic activities, economic impact, indirect employment.

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I. Introducción

El presente estudio espera esclarecer la participación del trabajo de la mujer en las actividades del sector secundario, que incluyen las desarrolladas en la industria manufacturera, explotación de minas y canteras, subsector energético y la construcción; transcendiendo a su vez a la medición del impacto o efecto económico en el resto de los sectores en Panamá. El mismo sector mantiene una caracterización tradicional del trabajo orientado y ejercido por el colectivo masculino, siendo un reto permanente la inclusión de la mujer a dichas actividades, discerniendo entre el bastión antes señalado para los hombres y la efectividad medida o la mejor precisión de los resultados producidos por las mujeres en los sectores manufactureros, según la Human Rights Watch (citado por Baraibar (2003).

La mujer al abocarse al derecho de percibir ingresos para sustentarse económicamente experimenta con profesiones fuera del contexto reservado por mucho tiempo a las labores domésticas, problemática tratada por muchos autores, desde varias perspectivas, comenzando con la antropológica que enfocada por Téllez y otros autores (2008) en el capitalismo, la separación de la producción del trabajo doméstico de la producción socializada considerada productiva, se da por la distinción entre el valor del uso y el valor del cambio de mercancías; no obstante desde la perspectiva feminista materialista, en los trabajos de Christine Delphy (citado por Smaldone (2017)), la mujer realiza una doble jornada al distribuir su tiempo, es decir aquella en que percibe su salario y la otra en el hogar, tareas que no incluye el valor de intercambio. Lucha iniciada en los años 70's cuya perspectiva política planteada por Lorente (2013), establece que en esta década enfrentó el reto de incluir en el debate de las sociedades desarrolladas más allá del trabajo doméstico, lo relacionado a papel de la ama de casa, la maternidad, la sexualidad femenina, de ser bella y la violencia contra la mujer; cuyos movimientos sociales desembocaron en sociedades menos desarrolladas, ya

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en América Latina, como ejemplo se cita a Sanz (2015), en Argentina la participación de la mujer se vuelve masiva, casi a la par de las movilizaciones de los hombres, que posibilitan la creencia de lograr transformaciones en el ámbito de las relaciones entre hombres y mujeres, especialmente en el reconocimiento de su accionar; de lo que se desprende en la evolución social en sintonía con Vega-Robles (2007), en que los logros traducidos en acceso a la educación y al aumento de las féminas en el mercado laboral son transformaciones que se han ido gestando con mayor o menor éxito en distintas sociedades.

Se asume entonces que las mujeres en Panamá desarrollan cada aspecto presentado y que al mismo tiempo se sustentan en cada proceso reivindicativo por conseguir un estadio social de mayor oportunidad en la toma de decisiones y no en los escenarios tal como lo señala la OIT (2022), sobre la división sexual del trabajo al adjudicar los trabajos a las mujeres más asimilables y por ende los menos valorados, de ahí se entiende lo planteado por la FAO (2022), lo relacionado con la compilación estadística debe ser generada por sexo y edad, exponiendo los problemas relativos a las mujeres en sociedad, para entonces medir la contribución económica de las mujeres y los hombres. En consecuencia, esta investigación por su valoración económica se centrará en la participación del colectivo femenino y masculino en 13 actividades de manufactura de alimentos[1], 5 actividades de la manufactura de textilería, prendas de vestir, cuero y calzados[2]; 3 actividades de manufactura madera[3], 5 actividades de manufactura de papel e impresión[4], 4 actividades de manufactura de sustancias y productos químicos[5], 4 actividades de manufactura de insumos para la construcción[6], 4 actividades de manufactura de metales[7], 14 actividades de otras industrias manufactureras[8], 3 actividades de manufactura de producción farmacéutica, caucho y plástico; y vidrio, 10 actividades del subsector de la construcción, 3 actividades del subsector de energía y 3 en el subsector de explotación de minas y canteras. Asumiendo de antemano que la principal problemática es el nivel de desigualdad existente en la participación entre mujeres y hombres en labores de transformación o actividades del sector secundario, y que para el tejido empresarial supone un reto al referirnos a los señalamientos de la OIT (2021), basado en un estudio del Banco de Desarrollo Interamericano (BID), el cual señala que la tasa de participación laboral de las mujeres panameñas que alcanza el 51%, esta 21 puntos porcentuales por debajo de los hombres.

La metodología propuesta plantea resultados en los ejercicios en género 2007, 2010 y 2015 relacionados a sus niveles de producción, empleo y el impacto en los sectores de la economía.

II. Metodología y Materiales

a) Metodología para estimar la producción en género por sector y año

El proceso metodológico parte con la obtención de los datos del VI Censo Económico Nacional, a través de la publicación del volumen III "Actividades económicas varias, expuesta al público el 24 de abril del 2014"; que compila las diferentes actividades económicas del sector secundario de la economía panameña, en un total de 4,196 importantes unidades del tejido empresarial investigadas o encuestadas para la fecha.

Luego en el proceso, se incorporan las Tablas Input-Output simétricas (TIO´s) del 2007, 2010 y 2015 con 43 sectores económicos (Valverde-Batista, 2022), elaboradas a partir de la publicación de los Cuadros de Oferta y Utilización (COU), por el Instituto Nacional de Estadística y Censo (INEC) a precios corrientes con año de referencia del 2007 y con medidas de volúmenes

[1] Procesamiento y conservación de carne, procesamiento y conservación de pescados y crustáceos, procesamiento y conservación de frutas y vegetales; elaboración de productos lácteos, elaboración de productos de molinería, elaboración de productos de panadería, elaboración de azúcar, Elaboración de cacao, chocolate y productos de confitería, elaboración de macarrones, fideos, cuscús y productos farináceos similares; elaboración de otros productos alimenticios, n.c.p.; Elaboración de alimentos para animales, destilación, rectificación y mezclas de bebidas alcohólicas y producción de bebidas no alcohólicas, producción de agua minerales y embotellada.

[2] Acabado de productos textiles, fabricación de prendas de textil, con excepción de prendas de piel; preparación, curtido y acabado del cuero, fabricación de maletas, bolso de mano, artículos de talabartería, entre otros y fabricación de calzados.

[3] Aserrados y acepilladora de madera, fabricación de partes y piezas de carpintería para edificios y construcciones y fabricación de recipientes de madera.

[4] Fabricación de pulpa, papel y cartón; fabricación de papel, cartón ondulado, envases de papel y cartón; fabricación de otros productos de papel y cartón; actividades de impresión y servicios relacionados con la impresión.

[5] Fabricación de sustancias químicas básicas, abonos y compuestos de nitrógeno; fabricación de pinturas, barnices y otros productos similares; fabricación de jabones, detergentes y otros productos similares y fabricación de otros productos químicos n.c.p.

[6] Producción de materiales de arcilla, fabricación de cemento, cal y yeso; fabricación de hormigón y otros productos; corte, tallado y acabado de piedra.

[7] fabricación de productos básicos de hierro y acero; fabricación de productos metálicos para uso estructural, fabricación de tanques, depósitos y recipientes de metal y fabricación de otros productos de metal n.c.p.

[8] Fabricación de productos eléctricos y de uso doméstico; fabricación de maquinaria y equipo n.c.p, fabricación de carrocerías de vehículos, remolques y semirremolques; fabricación de partes y piezas de motores de vehículos; construcción de buques y otros embarcaciones; fabricación de muebles y colchones; fabricación de joyas, artículos conexos, juegos y juguetes; fabricación de suministros médicos y dentales; otras industrias manufactureras n.c.p, y una variedad de actividades de reparación, en equipo de todo tipo, en maquinaria, en equipo electrónico y óptico, en equipo eléctrico y equipo de transporte.

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encadenadas. Adicional, la propuesta implica la construcción de los indicadores de producción, inversión y de trabajo en género de acuerdo con la Clasificación Industrial Internacional Uniforme (CIIU), utilizada y trabajada por el INEC en todas sus publicaciones vertidas y de carácter oficial.

A partir de aquí se adquiere la metodología desarrollada en el anterior trabajo "La mujer panameña, entre desigualdad y aporte en la producción primaria: análisis de impacto con las Tablas Input-Output" (Valverde-Batista, 2022), claro considerando las peculiaridades y diferencias asociadas al sector secundario de la economía, como también al rol que los actores hombres o mujeres llevan a cabo para contribuir con la generación de producción y al efecto que esa aportación da al resto de la economía; con las siguientes notaciones algebraicas:

$$PGIM_{h,m} = \frac{PAIM_{h.m}}{TPIM_{ca.mec\ \ldots}}\left(OPB_{a,t}\right)$$

Siendo,

$PGIM_{h,m}$, la producción en género generada de cada actividad de manufactura, es decir de los trabajadores o las trabajadoras.

$PAIM_{h.m}$, es la producción de la actividad como parte de la industria manufacturera seleccionada, ya sea como resultado de la participación de trabajadores o trabajadoras.

$TPIM_{ca.mec\ \ldots}$, es el total de producción de cada actividad de la industria manufacturera seleccionada (industria de alimentos, de textil, cuero y calzado; fabricación de productos de madera, fabricación de productos de papel e impresión, elaboración de sustancias químicas, también de productos farmacéuticos, vidrios, caucho y plástico; manufactura de insumos de la construcción y otras industrias manufactureras)

$OPB_{a,t}$, es la oferta a precios básicos de cada actividad productiva en el año seleccionado (2007, 2010 y 2015).

$$PGEMC_{h,m} = \frac{PAEMC_{h,m}}{TPEMC_{ca,mas}}\left(OPB_{a,t}\right)$$

Siendo,

$PGEMC_{h,m}$, es la producción en género generada en la actividad de explotación de minas y canteras, ya sea de trabajadores o trabajadoras.

$PAEMC_{h,m}$, es la producción por participación de hombres o mujeres en las actividades de explotación de minas y cantera.

$TPEMC_{ca,mas}$, es el total de la actividad en la rama económica de explotación de minas y canteras (producción de minerales metálicos, productos de piedra, arena y arcilla; sal común y cloruro de sodio).

$$PGSE_{h,m} = \frac{PASE_{h,m}}{TASE_{ca,eva}}\left(OPB_{a,t}\right)$$

Siendo,

$PGSE_{h,m}$, es la producción en género generada en las actividades de electricidad y agua, como parte del sector energético, ya sea de trabajadores o trabajadoras.

$PASE_{h,m}$, es la producción por participaciones de trabajadores y trabajadoras en las actividades del sector energético.

$TASE_{ca,eva}$, es el total de cada actividad del sector energético (Generación, transmisión y distribución de energía eléctrica; producción de gas, vapor y agua caliente; y captación y distribución de agua).

$$PGCONST_{h,m} = \frac{PACONST_{h,m}}{TACONST_{ca,epp..}}\left(OPB_{a,t}\right)$$

Siendo,

$PGCONST_{h,m}$, es la producción generada en género en las actividades de la construcción, ya sea de trabajadores o trabajadoras.

$PACONST_{h,m}$, es la producción de acuerdo con la participación de trabajadores o trabajadoras en las actividades de la construcción.

$TACONST_{ca,epp..}$, es el total de cada actividad de la construcción (construcción de edificios, construcción de caminos y vías férreas, construcción de proyectos de servicios públicos, construcción de otros proyectos de ingeniería civil, preparación del terreno, instalaciones eléctricas, fontanería e instalación de calefacción y de aire acondicionado; otro tipo de instalaciones de construcción, terminación de edificios y otras actividades especializadas en la construcción).

b) Metodología para obtener desagregada la formación bruta de capital fijo en género

Así mismo, se atiende lo relacionado a obtener el nivel de inversiones con las participaciones de hombres o mujeres en las actividades del sector secundario, las cuales son obtenidas de las cuentas 38 y 40 del cuadro de utilización publicados por el INEC para cada ejercicio investigado (2007, 2010 y 2015). Los resultados de estas expresiones servirán para determinar los niveles de producción en género, como también determinar el impacto en el resto de los sectores de la economía, a través de la exposición de indicadores de producción y empleo indirecto.

$$FBCF_{a,t} = \frac{TPCA_t}{TPSS_{\ t}}\left(VME_t\right)$$

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Siendo,

$FBCF_{a,t}$ es la formación bruta de capital fijo de cada actividad productiva en los años seleccionados (2007, 2010 y 2015),

$TPCA_t$ es el total de producción de cada actividad productiva en los años seleccionados (2007, 2010 y 2015),

$PBSS_t$ es la producción bruta del Sector Secundario en los años seleccionados (2007, 2010 y 2015); y

VME_t es el valor de la maquinaria y equipo a precios corrientes en cada actividad del SS, para los años seleccionados (2007, 2010 y 2015).

Al segregar la formación bruta de capital fijo de 19 subsectores del Sector Secundario, se procede con la determinación de cada porción de formación de capital fijo en género, es decir para hombres y mujeres, por medio de la siguiente formulación;

$$FBCFG_{h,m} = \frac{PG_{h,m}}{TPCA_t}\left(FBCF_{a,t}\right)$$

Donde,

$FBCFG_{h,m}$ es la formación bruta de capital fijo asociadas a la participación de trabajadores y trabajadoras,

$PG_{h,m}$ es la producción en género y

$TPCA_t$ es el total de producción de cada actividad del Sector Secundario en los años seleccionados (2007, 2010 y 2015).

c) *Metodología para calcular el nivel de producción por género, ante la variable de inversión en el modelo de demanda de Leontief*

Para la determinación de la capacidad de la variable de inversión como parte de la demanda final en la generación de producción, es necesaria la siguiente expresión;

$$PC_s = (1 - A)^{-1} * FBCF_{ss}$$

Siendo,

PC_s, es la producción calculada dada la inversión de FBCF de cada subsector de transformación o secundario;

$(1 - A)^{-1}$, la inversa de Leontief;

$FBCF_{sp}$, es la formación bruta de capital fijo de los subsectores de transformación o secundarios

Se termina presentando la ecuación siguiente;

$$PC_{g,s} = (1 - A)^{-1} * I_{g,s}$$

Siendo,

$PC_{g,s}$, es la producción calculada por género por subsector de transformación o secundario,

$(1 - A)^{-1}$, es la inversa de la Leontief,

$I_{g,s}$, es el vector de inversión, es decir de formación bruta de capital fijo.

d) *Metodología para determinar el impacto de la producción en género en la generación del empleo en el resto de los sectores económicos*

Para obtener tal resultado, se expone la siguiente metodología; al tener la distribución sectorial,

$$i, s = TIO_{i,s} / TOTAL\ TIO_i\ \forall i = Compras, inversión$$

Se continúa multiplicando una submatriz de coeficiente técnicos por la producción de cada género de (43X19), para lo cual se obtiene la demanda directa por cada género y por subsector de transformación o secundario;

$$DD_{i,sg} = SP_{i,sg} * (i, s)\ \forall i = Compras, inversión$$

Para luego multiplicar la producción y la inversión obtenida por género, con la inversa de Leontief y que dicho resultado arroja la producción total indirecta por género;

$$PTI_{i,sg} = (1 - A_i)^{-1} * DD_{i,sg}\ \forall i = Compras, inversión$$

Previo a la obtención de los empleos indirectos por género como parte de los subsectores industriales, de transformación o secundarios, se tendrán el coeficiente de valor agregado por subsector en términos totales para la economía panameña y que se muestra a continuación;

$$COEF\ de\ VAB_s = \frac{VAB_s}{PROD_s}$$

También en términos generales para los subsectores de transformación o secundarios, se tendrá el coeficiente de empleo, como se observa en la notación siguiente;

$$COEF\ de\ EMP_s = \frac{TPT_s}{PROD_s}$$

Una vez dados ambos coeficientes, se procede a multiplicar la producción total indirecta con el coeficiente del valor agregado, obteniéndose el valor agregado indirecto, a través de su siguiente expresión;

$$VAIND_s = PTI_s * COEF\ de\ VAB_s\ \forall i = Compras, Inversión$$

Al tener esta última valoración, el valor agregado indirecto, se pasa a obtenerse el empleo indirecto por subsector de transformación o secundario y género; mediante la siguiente expresión;

$$EIND_{s,g} = PTI_{s,g} * COEF\ de\ EMP_s\ \forall i = Compras, Inversión$$

Una vez proporcionada la metodología propicia para determinar la producción directa e indirecta, por hombre o mujer; adicional los efectos en el empleo

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generado en estos sectores y los demás en el sistema económico; se conocerán por ejercicio analizado y de acuerdo con las participaciones, los aportes en los siguientes apartados de cada genero identificando la brecha existente en la producción en el sector de transformación o secundario en Panamá.

III. Resultados

a) *Determinación de la producción por sector y actividades en género en los subsectores de transformación para los años 2007, 2010 y 2015*

Los resultados confirman la brecha de genero existente en las actividades pertenecientes al sector secundario de la economía panameña, al representar para el 2007 alrededor del 24% de lo producido, es decir $. 1,540.2 millones, mientras que los hombres producen hasta los $. 4,805.6 millones, siendo el 76% del total (ver cuadro No.1). Esta participación del colectivo femenino difiere bastante con la de México en 1999 con un informe de la OIT (citado por Baraibar (2003)), presentado 8 años antes señaló que la participación de las trabajadoras, en actividades como la de procesamiento de alimento representaban el 85.5%, mientras que, en los resultados presentados para Panamá, al sumar las actividades de procesamiento de carnes y pescado ($. 134.5 millones), procesamiento vegetal ($.1.3 millones), elaboración de productos lácteos ($.47.5 millones) y la producción de productos de molinería, almidón y otros productos alimenticios ($. 159.4 millones) promediaron apenas el 24.4%. Adicional, el mismo informe mostró que actividades como el procesamiento de equipo electrónico, maquinaria eléctrica, textiles y prendas de vestir, equipo de transporte, mueble y artículos, entre otras; la participación femenina representa el 82.4%, 75.2%, 83%, 32.6% y 64.9%; que combinadas llevan a redondear hasta la mitad de la fuerza de trabajo en la industria manufacturera mejicana.

Las ramas económicas en Panamá de mayor participación en la que el colectivo femenino se desarrolla en este sector de transformación son en la actividad económica de la electricidad con el 36%, resultado que impresiona por la alta participación, por encima de la media mundial que se estima en 22% (Garnica, 2020) y que se requiere seguir impulsando en nuestro país, sobre todo por la intensidad del uso de la energía que se relaciona con las labores del hogar, aspecto destacado en Méjico por Duran (2021), la cual propone la incorporación de la mujer a través de un proyecto en actividades productivas y la toma de decisión, con la finalidad de disminuir su tiempo y esfuerzo en las labores domésticas. Sin embargo, la producción de la electricidad cifrada en $. 533 millones, es inferior al de la producción manufacturera de $. 753.7 millones siendo el principal aporte de las féminas y llegando al 23% de la participación a diferencia del 77% de los hombres; dato que al referenciarlo con los esgrimidos por la Fundación Mundial de Manufactura en donde la representación de las mujeres alcanza el 30% (Juárez, 2021), Panamá se encuentra por debajo de la media mundial, aunque coincide con el estudio en que en la fabricación de prendas de vestir, la participación del colectivo femenino es mayor a los de los hombres, en una relación de 58% a 42% (ver cuadro no.1). Una realidad que comparte con Argentina de acuerdo con un estudio realizado por el Centro de Estudios para la Producción (CEP XXI), cuyos resultados revelaron después de encuestar alrededor a 4,000 empresas, que solo en la producción de prendas de vestir la participación de la mujer supera a la de los hombres, el resto está por debajo del 50% (Infobae, 2021).

Otro sector masculinizado y gran importancia para el país, es el de la construcción cuantificando la producción del colectivo femenino a precios corrientes para este ejercicio 2007 en $. 247.6 millones y expresado en valores relativos se establecería en un 16%, que asombra por lo difícil que es la inclusión de la mujer en actividades de este tipo, más por comparar esta información con la generada por directora de la Revista de la Construcción, Mireia Font Martin (2022), en la que revela según estudios en Europa tan solo las mujeres participan con el 9% y en España incluso es menor, es decir el 8.8%. En este mismo cuadro los aportes de la participación del colectivo femenino solo alcanzan los $. 3.1 millones y $. 2.2 millones en las ramas económicas de suministro, captación y distribución de agua; y explotación de minas y canteras respectivamente.

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Cuadro No. 1

Producción a parecios básicos con enfoque de género del sector secundario en 2007 (en miles de dólares)

Actividades	Producción total				Total	
	Trabajadores		Trabajadoras			
Explotación de otras minas y canteras	16,875.9	88%	2,196.6	12%	19,072.5	100%
Explotación de minas y canteras	**16,875.9**	**88%**	**2,196.6**	**12%**	19,072.5	**100%**
Procesamiento de carnes y pescados	393,310.6	75%	134,512.8	25%	527,823.3	100%
Procesamiento vegetal	4,947.0	79%	1,335.9	21%	6,282.9	100%
Elaboración de productos lácteos	221,496.8	82%	47,515.6	18%	269,012.4	100%
Producción de productos de molineria, almidón y otros productos alimenticios	439,345.3	73%	159,350.4	27%	598,695.7	100%
Elaboración de bebidas	122,895.9	76%	39,280.3	24%	162,176.2	100%
Elaboración de prendas de vestir y calzados	30,630.2	42%	41,515.4	58%	72,145.6	100%
Elaboración de productos de madera	8,373.4	88%	1,123.3	12%	9,496.8	100%
Elaboración de productos de papel y de impresión	126,927.6	68%	60,032.1	32%	186,959.7	100%
Fabricación de productos químicos	90,045.4	73%	33,905.6	27%	123,951.0	100%
Fabricación de productos farmacéuticos	16,437.2	52%	15,289.2	48%	31,726.5	100%
Elaboración de productos plásticos y de caucho	144,741.9	80%	35,081.7	20%	179,823.6	100%
Elaboración de cemento, cal y yeso	206,586.2	90%	22,414.2	10%	229,000.4	100%
Vidrio y otros productos no metálicos	17,585.4	86%	2,749.7	14%	20,335.1	100%
Metales comunes	271,847.8	85%	46,554.8	15%	318,402.7	100%
Otras industrias manufactureras	384,417.7	77%	113,074.5	23%	497,492.2	100%
Industrias manufactureras	**2,479,588.4**	**77%**	**753,735.6**	**23%**	**3,233,324.0**	**100%**
Suministro y distribución de energía	951,141.9	64%	533,648.3	36%	1,484,790.2	100%
Electricidad, gas y vapor	**951,141.9**	**64%**	**533,648.3**	**36%**	1,484,790.2	**100%**
Suministro, captación y distribución de agua	21,229.5	87%	3,065.1	13%	24,294.6	100%
Suministro de agua y gestión de desechos	**21,229.5**	**87%**	**3,065.1**	**13%**	24,294.6	**100%**
Construcción de edificios	297,273.8	86%	48,801.1	14%	346,075.0	100%
Construcción de caminos y vía férreas	737,517.9	81%	169,671.0	19%	907,189.0	100%
Construcción de proyectos del Ser.Públicos	15,827.3	95%	885.0	5%	16,712.3	100%
Construcción de otros proyectos de Ing.	91,505.8	93%	6,942.5	7%	98,448.3	100%
Preparación del terreno	34,249.4	92%	2,959.4	8%	37,208.8	100%
Instalacion eléctrica	58,976.4	91%	5,755.5	9%	64,731.9	100%
Fontanería e instalación de Aire Acond.	24,570.8	90%	2,880.8	10%	27,451.7	100%
Otro tipo de instalaciones de construcc.	21,325.2	88%	2,885.8	12%	24,211.0	100%
Terminación de edificios	20,659.1	88%	2,782.7	12%	23,441.8	100%
Otras actividades especializadas	34,859.0	90%	3,988.3	10%	38,847.3	100%
Construcción	**1,336,764.7**	**84%**	**247,552.3**	**16%**	**1,584,317.0**	**100%**
Total	**4,805,600.5**	**76%**	**1,540,197.8**	**24%**	**6,345,798.4**	**100%**

Fuente: Elaboración por el autor, considerando la tabla Input-Output del 2007 en base a los datos del Instituto Nacional de Estadística y Censo, considerando que las proporciones en materia de genero son obtenidas del volumen III del Censo Nacional Económico.

Para el 2010 la participación femenina pierde un punto porcentual con respecto al ejercicio 2007, al producir $. 2, 030.6 millones, en contraposición de la producción del colectivo masculino que alcanza los $. 6, 676.9 millones (ver cuadro No.2), explicado por el mayor crecimiento anual del empleo masculino calculado en 11.6% a diferencia del experimentado por el colectivo femenino del 9.7%. La razón particular de este menor crecimiento se debió a la caída de las exportaciones pesqueras procesadas y destinadas a los mercados de los Estados Unidos y Europa, economías afectadas por la crisis financiera; y que como resultado se perdieron hasta 2,760 empleos (Valverde-Batista, 2022), frenando y perjudicando al colectivo femenino.

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Cuadro No.2						
Producción a parecios básicos con enfoque de género del sector secundario en 2010 (en miles de dólares)						
Actividades	Producción total				Total	
	Trabajadores		Trabajadoras			
Explotación de otras minas y canteras	36,275.3	88%	4,714.3	12%	40,989.6	100%
Explotación de minas y canteras	**36,275.3**	**88%**	**4,714.3**	**12%**	**40,989.6**	**100%**
Procesamiento de carnes y pescados	418,181.1	75%	143,018.5	25%	561,199.6	100%
Procesamiento vegetal	7,119.6	79%	1,922.6	21%	9,042.3	100%
Elaboración de productos lácteos	309,435.0	82%	66,380.1	18%	375,815.1	100%
Producción de productos de molineria, almidón y otros productos alimenticios	650,410.5	73%	235,903.6	27%	886,314.1	100%
Elaboración de bebidas	182,324.6	76%	58,275.1	24%	240,599.7	100%
Elaboración de prendas de vestir y calzados	30,876.8	42%	41,849.8	58%	72,726.6	100%
Elaboración de productos de madera	11,034.3	88%	1,480.3	12%	12,514.6	100%
Elaboración de productos de papel y de impresión	142,362.2	68%	67,332.1	32%	209,694.3	100%
Fabricación de productos químicos	82,110.0	73%	30,917.6	27%	113,027.6	100%
Fabricación de productos farmacéuticos	21,278.2	52%	19,792.1	48%	41,070.4	100%
Elaboración de productos plásticos y de caucho	138,393.0	80%	33,542.9	20%	171,935.9	100%
Elaboración de cemento, cal y yeso	409,585.1	90%	44,439.2	10%	454,024.3	100%
Vidrio y otros productos no metálicos	31,760.2	86%	4,966.2	14%	36,726.4	100%
Metales comunes	271,903.3	85%	46,564.3	15%	318,467.7	100%
Otras industrias manufactureras	416,463.6	77%	122,500.6	23%	538,964.2	100%
Industrias manufactureras	**3,123,237.7**	**77%**	**918,885.1**	**23%**	**4,042,122.8**	**100%**
Suministro y distribución de energía	1,215,086.9	64%	681,737.4	36%	1,896,824.3	100%
Electricidad, gas y vapor	**1,215,086.9**	**64%**	**681,737.4**	**36%**	**1,896,824.3**	**100%**
Suministro, captación y distribución de agua	27,120.8	87%	3,915.6	13%	31,036.4	100%
Suministro de agua y gestión de desechos	**27,120.8**	**87%**	**3,915.6**	**13%**	**31,036.4**	**100%**
Construcción de edificios	505,954.1	86%	83,058.5	14%	589,012.7	100%
Construcción de caminos y vía férreas	1,255,240.8	81%	288,776.7	19%	1,544,017.5	100%
Construcción de proyectos del Ser.Públicos	26,937.7	95%	1,506.3	5%	28,444.0	100%
Construcción de otros proyectos de Ing.	155,741.0	93%	11,816.1	7%	167,557.1	100%
Preparación del terreno	58,291.8	92%	5,036.8	8%	63,328.6	100%
Instalacion eléctrica	100,376.7	91%	9,795.8	9%	110,172.4	100%
Fontanería e instalación de Aire Acond.	41,819.1	90%	4,903.1	10%	46,722.2	100%
Otro tipo de instalaciones de construcc.	36,295.0	88%	4,911.6	12%	41,206.6	100%
Terminación de edificios	35,161.3	88%	4,736.1	12%	39,897.4	100%
Otras actividades especializadas	59,329.4	90%	6,788.0	10%	66,117.4	100%
Construcción	**2,275,146.9**	**84%**	**421,329.0**	**16%**	**2,696,475.9**	**100%**
Total	**6,676,867.5**	**77%**	**2,030,581.5**	**23%**	**8,707,449.0**	**100%**

Fuente: Elaboración por el autor, considerando la Tabla Input-Output del 2010 en base a los datos del Instituto Nacional de Estadística y Censo, considerando que las proporciones en materia de genero son obtenidas del volumen III del Censo Nacional Económico.

La tendencia observada al comparar los datos obtenidos en el ejercicio 2015 con el 2010, denotan la perdida de participación del colectivo femenino en tres puntos porcentuales, por consiguiente, se incrementa la brecha de género (ver cuadro No. 3). Especialmente esta tendencia es influenciada por la pérdida de la participación del colectivo femenino en la industria manufacturera, alejándose aún más de la media mundial y que responde al debilitamiento del sector secundario en la última década, arrastrado por la desarticulación del sector primario (Valverde-Batista, 2022).

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Cuadro No. 3						
Producción a parecios básicos con enfoque de género del sector secundario en 2015 (en miles de dólares)						
Actividades	Producción total				Total	
	Trabajadores		Trabajadoras			
Explotación de otras minas y canteras	111,864.9	87%	16,458.8	13%	128,323.6	100%
Explotación de minas y canteras	**111,864.9**	**87%**	**16,458.8**	**13%**	128,323.6	**100%**
Procesamiento de carnes y pescados	624,157.3	75%	213,462.7	25%	837,620.0	100%
Procesamiento vegetal	10,026.3	79%	2,707.5	21%	12,733.8	100%
Elaboración de productos lácteos	446,677.8	82%	95,821.5	18%	542,499.3	100%
Producción de productos de molineria, almidón y otros productos alimenticios	883,608.5	73%	320,484.5	27%	1,204,092.9	100%
Elaboración de bebidas	294,035.3	76%	93,980.4	24%	388,015.6	100%
Elaboración de prendas de vestir y calzados	38,747.6	42%	52,517.7	58%	91,265.3	100%
Elaboración de productos de madera	19,283.7	88%	2,587.0	12%	21,870.7	100%
Elaboración de productos de papel y de impresión	192,684.4	68%	91,132.6	32%	283,817.0	100%
Fabricación de productos químicos	113,265.8	73%	42,649.0	27%	155,914.8	100%
Fabricación de productos farmacéuticos	22,513.3	52%	20,941.0	48%	43,454.3	100%
Elaboración de productos plásticos y de caucho	147,871.2	80%	35,840.2	20%	183,711.4	100%
Elaboración de cemento, cal y yeso	1,058,290.3	90%	114,822.4	10%	1,173,112.6	100%
Vidrio y otros productos no metálicos	67,040.4	86%	10,482.8	14%	77,523.1	100%
Metales comunes	350,293.3	85%	59,988.9	15%	410,282.1	100%
Otras industrias manufactureras	517,417.7	77%	152,195.7	23%	669,613.4	100%
Industrias manufactureras	**4,785,912.7**	**79%**	**1,309,613.6**	**21%**	**6,095,526.4**	**100%**
Suministro y distribución de energía	1,374,156.5	64%	770,985.1	36%	2,145,141.5	100%
Electricidad, gas y vapor	**1,374,156.5**	**64%**	**770,985.1**	**36%**	2,145,141.5	**100%**
Suministro, captación y distribución de agua	30,671.2	87%	4,428.2	13%	35,099.5	100%
Suministro de agua y gestión de desechos	**30,671.2**	**87%**	**4,428.2**	**13%**	35,099.5	**100%**
Construcción de edificios	1,515,301.2	86%	248,755.1	14%	1,764,056.4	100%
Construcción de caminos y vía férreas	3,759,368.2	81%	864,868.3	19%	4,624,236.5	100%
Construcción de proyectos del Ser.Públicos	80,676.9	95%	4,511.3	5%	85,188.1	100%
Construcción de otros proyectos de Ing.	466,434.6	93%	35,388.4	7%	501,823.0	100%
Preparación del terreno	174,580.4	92%	15,084.9	8%	189,665.3	100%
Instalacion eléctrica	300,621.9	91%	29,337.7	9%	329,959.6	100%
Fontanería e instalación de Aire Acond.	125,245.5	90%	14,684.6	10%	139,930.0	100%
Otro tipo de instalaciones de construcc.	108,701.3	88%	14,709.9	12%	123,411.2	100%
Terminación de edificios	105,305.9	88%	14,184.4	12%	119,490.3	100%
Otras actividades especializadas	177,687.8	90%	20,329.7	10%	198,017.5	100%
Construcción	**6,813,923.6**	**84%**	**1,261,854.2**	**16%**	**8,075,777.8**	**100%**
Total	**13,116,528.9**	**80%**	**3,363,340.0**	**20%**	**16,479,868.9**	**100%**

Fuente: Elaboración por el autor, considerando la Tabla Input-Output del 2015 en base a los datos del Instituto Nacional de Estadística y Censo, considerando que las proporciones en materia de genero son obtenidas del volumen III del Censo Nacional Económico.

El reflejo de estos resultados denota la frágil condición de la mujer en el entorno del sector de la transformación, sobre todo en lo referido a la industria manufacturera, la cual se ha rezagado y se remonta a casi los niveles establecidos a finales del siglo XX e inicios del siglo XXI, es decir del 19.1% de participación femenina (Juárez, 2021), sosteniendo que son necesarios los requerimientos por parte de la sector empresarial, motivados y propiciados por políticas de igualdad, que consigan revertir este atraso mediante la mejora continua, la apertura de oportunidades claras y la inversión proporcionada para que el colectivo femenino navegue en un ambiente del sector secundario, fuera de lo caracterizado tradicionalmente como masculinizado al referirse a las actividades económicas que lo componen.

b) Producción generada en función de la inversión utilizada, aplicando el modelo de Leontief para los ejercicios 2007, 2010 y 2015.

Al valorar el nivel de inversiones en el sector transformador o secundario, se puede deducir que son aceptables, al pasar de $.177.5 millones en el ejercicio 2007 a $. 276.1 millones en el 2010, para luego llegar a $. 675.9 millones en el 2015 (Ver cuadro No. 4), exhibiendo un potente crecimiento medio anual del 18.2%, escenario que se sustentó para la época con la posición de Alicia Bárcena (2017), resaltando que en

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Panamá la inversión extranjera crecía a un ritmo del 16%, concentrando el 44% de las nuevas inversiones en la región centroamericana. Esta condición permite que la generación de producción de esta variable endógena, como parte de la demanda final tenga efectos sobre el sistema económico alcanzando hasta los $. 270.1 millones en el 2007, $. 422.9 millones en el 2010 y 1,030.9 millones para el 2015, logrando que la producción indirecta del mismo sector represente el 89.4%, 89.2% y el 90.2% respectivamente para los tres ejercicios analizados; contrastando lo observado en el estudio en el sector primario, en el cual la inversión producía apenas el 0.65% en promedio entre el 2007 y el 2010, empeorando para el para el 2015 con una cuantificación de 0.37% (Valverde-Batista, 2022).

Cuadro No. 4: Inversión y Producción Generada Por Cada Subsector Del Sector Secundario en el 2007, 2010 y 2015

		2007		2010		2015	
		FBCF	PG	FBCF	PG	FBCF	PG
	Totales	177.5	270.1	276.1	422.9	675.9	1,030.9
9	Exp. Minas y canteras		5.2		10.8		48.3
10	Preparación de carnes y pescados		0.7		0.3		1.4
11	Preparación de frutas y vegetales		0.8		1.5		1.8
12	Elaboración de productos lácteos		0.7		1.1		0.5
13	Almidones y otros prod. Alimenticios		3.1		3.8		4.4
14	Elaboración de bebidas		2.4		3.7		5.7
15	Prod. Prendas de vestir, cuero y calzados		15.2		16.9		17.0
16	Elaboración de productos de madera		2.3		3.3		7.0
17	Elaboración de productos de papel		2.5		3.5		5.6
18	Elaboración de sustancias químicas		5.1		5.6		8.3
19	Producciones farmacéuticas		3.2		12.6		20.6
20	Producción de cauchos y plásticos		6.7		10.7		16.1
21	Producción de Cemento, cal y yeso		10.3		18.1		55.7
22	Producción de vidrio y otros prod.		5.5		9.9		22.3
23	Metales comunes		7.7		9.6		12.5
24	Otras industrias manufactureras		93.5		126.8		199.0
25	Electricidad		2.9		3.9		5.4
26	Captación y distribución de agua		0.4		0.4		0.8
27	Construcción		73.1		134.7		497.8
	Total del Sector Secundario		241.4		377.2		930.2
	Resto de los sectores		28.7		45.7		100.7
	% del SS del total		89.4		89.2		90.2

Fuente: Elaborada por el autor, considerando los niveles de inversión proporcionados por el cuadro de utilización del INEC y la utilización del modelo de demanda de Leontief para los ejercicios 2007, 2010, 2015 y 2020.

El análisis anterior, aunque plantea condiciones muy favorables para el sector secundario o de transformación, tiene implícito la marcada desigualdad en términos de género, es decir hay una relación del 72% por la participación de los trabajadores y tan solo un 28% supone la participación del colectivo femenino para el 2007 (Ver cuadro No.5). No obstante, al comparar estos resultados con los obtenidos en el sector primario panameño, las trabajadoras del sector transformación superan sustancialmente al 4.2% de las que ostentan las productoras (Valverde-Batista, 2022). Es necesario replantear este contexto, considerando los pronósticos de la Consultora Mckinsey (2019), la cual afirma que, de haber una participación de las mujeres

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idéntica a la participación de los hombres, se podría alcanzar hasta los $. 2,600 billones en América Latina, esperando con esto un significativo aporte en el PIB de Panamá, al materializar el enfoque del ESADE (Buckland, Cordobés, Oueda, & Murphy, 2019), es decir financiar proyectos donde las mujeres son lideres, en empresas que haya una política de igualdad y en empresas que se hagan productos y servicios que beneficien a las mujeres.

Cuadro No. 5: Inversión de capital fijo, producción generada y totales en género para el 2007 (en millones de dólares)

Subsectores		Trabajador			Trabajadora			Totales	
		FBCF	%	PG	FBCF	%	PG	FBCF	PG
	Totales	127.7	72.0	194.3	49.8	28.0	75.8	177.5	270.1
9	Exp. Minas y canteras			3.7			1.5		5.2
10	Preparación de carnes y pescados			0.5			0.2		0.7
11	Preparación de frutas y vegetales			0.6			0.2		0.8
12	Elaboración de productos lácteos			0.5			0.2		0.7
13	Almidones y otros prod. Alimenticios			2.2			0.9		3.1
14	Elaboración de bebidas			1.7			0.7		2.4
15	Prod. Prendas de vestir, cuero y calzados			11.0			4.3		15.2
16	Elaboración de productos de madera			1.6			0.6		2.3
17	Elaboración de productos de papel			1.8			0.7		2.5
18	Elaboración de sustancias químicas			3.7			1.4		5.1
19	Producción farmacéutica			2.3			0.9		3.2
20	Producción de cauchos y plásticos			4.9			1.9		6.7
21	Producción de Cemento, cal y yeso			7.4			2.9		10.3
22	Producción de vidrio y otros prod.			4.0			1.5		5.5
23	Metales comunes			5.6			2.2		7.7
24	Otras industrias manufactureras			67.3			26.2		93.5
25	Electricidad			2.1			0.8		2.9
26	Captación y distribución de agua			0.3			0.1		0.4
27	Construcción			52.6			20.5		73.1
	Subtotal del Sector Secundario			173.7			67.7		241.4
	Subtotal del resto de los sectores			20.6			8.0		28.7

Fuente: Elaboración propia de acuerdo a la estimación de la producción generada en género para el 2007 con el modelo de Leontief.

Al observar los resultados del 2010 contenido en el cuadro No. 6, muestra una rebaja de 3 décimas porcentuales con respecto al ejercicio 2007 en la participación de la Formación Bruta de Capital Fijo (FBCF), por parte del colectivo femenino, evidenciando una relación directa entre la reducción de la participación en la inversión y la participación en la producción contemplado en el cuadro No. 2, al disminuir en un punto porcentual. Sin embargo, al valorar el crecimiento medio anual, este se fija en 17.5% al pasar de $. 49.8 millones en 2007 a $. 181.0 millones en 2015 (ver cuadro No. 7), es muy positivo este indicador, aunque por debajo de la media registrada en 18.2% al valorar el total de la FBCF.

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Cuadro No. 6: Inversión de capital fijo, producción generada y totales en género para el 2010 (en millones de dólares)

Subsectores		Trabajador			Trabajadora			Totales	
		FBCF	%	PG	FBCF	%	PG	FBCF	PG
	Totales	199.6	72.3	305.8	76.4	27.7	117.1	276.1	422.9
9	Exp. Minas y canteras			7.8			3.0		10.8
10	Preparación de carnes y pescados			0.2			0.1		0.3
11	Preparación de frutas y vegetales			1.1			0.4		1.5
12	Elaboración de productos lácteos			0.8			0.3		1.1
13	Almidones y otros prod. Alimenticios			2.8			1.1		3.8
14	Elaboración de bebidas			2.7			1.0		3.7
15	Prod. Prendas de vestir, cuero y calzados			12.2			4.7		16.9
16	Elaboración de productos de madera			2.4			0.9		3.3
17	Elaboración de productos de papel			2.5			1.0		3.5
18	Elaboración de sustancias químicas			4.0			1.5		5.6
19	Producción farmacéuticas			9.1			3.5		12.6
20	Producción de cauchos y plásticos			7.7			3.0		10.7
21	Producción de Cemento, cal y yeso			13.1			5.0		18.1
22	Producción de vidrio y otros prod.			7.1			2.7		9.9
23	Metales comunes			6.9			2.7		9.6
24	Otras industrias manufactureras			91.7			35.1		126.8
25	Electricidad			2.8			1.1		3.9
26	Captación y distribución de agua			0.3			0.1		0.4
27	Construcción			97.4			37.3		134.7
	Subtotal del Sector Secundario			272.8			104.5		377.2
	Subtotal del resto de los sectores			33.0			12.6		45.7

Fuente: Elaboración propia de acuerdo a la estimación de la producción generada en género para el 2010 con el modelo de Leontief.

Al menor ritmo de crecimiento de la FBCF en las mujeres que en las de los hombres cifradas en 18.4% en este periodo pasando de $. 127.7 millones en el 2007 a $. 494.9 millones en el 2015; mayor es la disminución de la participación de inversión por parte del colectivo femenino, perdiendo 9 décimas entre el 2010 y el 2015, situando esta valoración en 26.8% (ver cuadro No.7). Es alentador sostener que el nivel de inversión expuesta en este último cuadro desvela que se produce indirectamente $. 276.1 millones, de la cual $. 249.1 millones serían en el conjunto de los subsectores pertenecientes al sector secundario, en especial en el de la construcción cuantificado en $. 133.3 millones, manteniendo el optimismo por el avance de las mujeres evidenciada en cada aspecto hasta el momento presentado.

Cuadro No. 7: Inversión de capital fijo, producción generada y totales en género para el 2010 (en millones de dólares)

Subsectores		Trabajador			Trabajadora			Totales	
		FBCF	%	PG	FBCF	%	PG	FBCF	PG
	Totales	494.9	73.2	754.8	181.0	26.8	276.1	675.9	1,030.9
9	Exp. Minas y canteras			35.4			12.9		48.3
10	Preparación de carnes y pescados			1.0			0.4		1.4
11	Preparación de frutas y vegetales			1.3			0.5		1.8
12	Elaboración de productos lácteos			0.4			0.1		0.5

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13	Almidones y otros prod. Alimenticios	3.2	1.2	4.4
14	Elaboración de bebidas	4.2	1.5	5.7
15	Prod. Prendas de vestir, cuero y calzados	12.5	4.6	17.0
16	Elaboración de productos de madera	5.1	1.9	7.0
17	Elaboración de productos de papel	4.1	1.5	5.6
18	Elaboración de sustancias químicas	6.1	2.2	8.3
19	Producción farmacéuticas	15.1	5.5	20.6
20	Producción de cauchos y plásticos	11.8	4.3	16.1
21	Producción de Cemento, cal y yeso	40.8	14.9	55.7
22	Producción de vidrio y otros prod.	16.3	6.0	22.3
23	Metales comunes	9.2	3.4	12.5
24	Otras industrias manufactureras	145.7	53.3	199.0
25	Electricidad	4.0	1.4	5.4
26	Captación y distribución de agua	0.6	0.2	0.8
27	Construcción	364.5	133.3	497.8
	Subtotal del Sector Secundario	681.1	249.1	930.2
	Subtotal del resto de los sectores	73.7	27.0	100.7

Fuente: Elaboración propia de acuerdo con la estimación de la producción generada en género para el 2015 con el modelo de Leontief.

c) *Impacto económico en producción y empleo en género en la economía panameña.*

Al combinar el nivel de compras realizadas por cada actividad económica del sector de transformación o secundario, con la inversión analizada en el apartado anterior para los ejercicios 2007, 2010 y 2015; expone la marcada desigualdad entre hombres y mujeres relacionadas a la producción y el empleo, con una dinámica o tendencia de incremento de la brecha de genero tal como se aprecia en el cuadro No. 8; es decir en el 2007 la producción asociada al colectivo masculino llego al sumar tantos los efectos directos como los indirectos a los $. 6, 917.3 millones, mientras que la aportación femenina alcanzo tan solo los $. 2,183.8 millones, una diferencia calculada en $. 4,733.5, que pasa a $. 6,626.0 millones en el ejercicio 2010 y 12,873.8 millones en 2015, al realizar la misma operación. Así mismo se dan los resultados en el empleo; en consecuencia, a la mala participación en género en el mercado laboral analizado, al observarse diferencias en los efectos indirectos, de 44,177 en el 2007 (61,534 hombres y 17,357 mujeres), 42,533 en el 2010 y 44,079 en 2015.

Cuadro No. 8

Efecto directo e indirecto en género 2007, 2010 y 2015 (en millones de dólares y unidades de empleo)

	Trabajadores						Trabajadoras					
	Producción			Empleos			Producción			Empleos		
	2007	2010	2015	2007	2010	2015	2007	2010	2015	2007	2010	2015
Efecto directo	4,805.6	6,676.9	13,116.5	122,129	124,345	161,614	1,540.2	2,030.6	3,363.3	26,881	26,443	31,964
Efecto indirecto	2,111.7	2,879.8	4,316.4	61,534	61,598	60,247	643.6	900.2	1,195.8	17,357	19,064	16,167
Efecto directo e indirecto	**6,917.3**	**9,556.7**	**17,432.9**	**183,663**	**185,943**	**221,861**	**2,183.8**	**2,930.7**	**4,559.2**	**44,238**	**45,507**	**48,132**

Fuente: Elaborado por el autor, considerando la metodología de análisis de impacto para los ejercicios del 2007, 2010 y 2015.

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Ahora bien, esta condición desigualitaria evidenciada contrasta con el impacto en producción calculado por trabajador y trabajadora en el resto de los subsectores de la economía que para el 2007 (ver cuadro No.9), al observarse el coeficiente de la producción indirecta del colectivo femenino es del 0.346, es decir de $. 222.4 millones sobre los $. 643.6 millones explicado por la vinculación de la producción de la industria alimenticia con los subsectores primarios con una participación del 43.8% (ver cuadro No. 10); superando al colectivo masculino que alcanza el 0.339 ($.716.9 sobre $.2,111.7 millones) y que ratifica lo planteado por la Human Rights Watch (Baraibar, 2003). Es probable también que los niveles de innovación tecnológica de estos sectores industriales, en sintonía con Natalia Moreno (2020), ha sido un factor fundamental para la mejora de la productividad de la fuerza laboral del colectivo femenino; sosteniendo que, en la cría de animales, la industria aviar tiene mayor peso y reflejo un avance tecnológico para la fecha (Valverde-Batista, 2022).

Dejando de plano al valorar estos resultados la enorme importancia de desarrollar políticas de equidad en género, tal como la plantea el ESADE (Buckland, Cordobés, Oueda, & Murphy, 2019), bajo la perspectiva de liderazgo de la mujer en las empresas y que se fija con especial atención a la afirmación de Rubiano (BM, 2022), que aquellas mujeres que eligen desarrollarse en actividades dominadas por los hombres, y que resultan ser más rentables, obtienen en promedio beneficios superiores y los indicadores empresariales reflejan mejor desempeño. Otro aspecto destacable analizado y propuesto por la ESADE es el de favorecer en inversiones a empresas que produzcan artículos que benefician a las mujeres, comparten posición con María José García Crespo (2021), la cual sostiene que al contar con mujeres en la dirección de las empresas, se tendría una mejor visión de los consumidores, al argumentar que en los países desarrollados, las mujeres deciden en las compras de automóviles en el 68%, en un 93% de las compras agroalimentarias y el 92% de las actividades recreativas y vacacionales.

El otro importante indicador es el coeficiente de empleo indirecto, es decir al agregar todos los empleos indirectos producidos como efecto de la producción del grupo industrial o transformador generado en la economía panameña; se denota un alcance significativo en los demás sectores (primario y terciario) correspondiendo a los hombres la supremacía para el 2007, al obtener 0.964 sobre el 0.96 de las mujeres, tal como se aprecia a continuación.

Cuadro No. 9: Impacto en la producción (Millones de dolares), empleo directo e indirecto por trabajador y trabajadora en cada subsector secundario y otros sectores en el 2007

	Trabajador			Trabajadora		
	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directo de cada sector	Empleo Indirecto	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directo de cada sector	Empleo Indirecto
Explotación de minas y canteras	940	64.0	151	123	12.7	30
Procesamiento de carnes y pescados	8,891	18.2	40	3,076	6.0	13
Procesamiento vegetal	721	18.7	17	212	5.6	5
Elaboracion de productos lacteos	2,816	20.9	50	611	5.7	13
Produccion de productos de molineria, almidon y otros productos alimenticios	8,428	75.0	176	3,164	24.1	56
Elaboracion de bebidas	1,680	11.1	8	547	3.5	2
Elaboracion de prendas de vestir y calzados	1,152	16.9	1	1,477	6.1	0
Elaboracion de productos de madera	876	22.6	131	123	5.1	30
Elaboracion de productos de papel y de impresion	3,026	52.5	129	1,438	17.0	42
Fabricacion de productos quimicos	614	87.2	34	229	24.6	10
Fabricacion de productos farmaceuticos	284	5.3	0	265	1.9	0
Elaboracion de productos plasticos y de caucho	1,924	82.1	88	467	19.9	21
Elaboracion de cemento, cal y yeso	538	126.5	53	60	24.7	10
Vidrio y otros productos no metalicos	1,609	55.1	97	338	11.8	21

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Metales comunes	149	113.1	54	22	23.7	11
Otras industrias manufactureras	7,306	462.2	116	1,962	170.4	43
Suministro y distribucion de energia	1,874	79.4	102	261	28.0	36
Suministro, captacion y distribucion de agua	1,671	10.6	141	778	3.8	50
Construccion	77,629	73.3	834	11,729	26.7	304
Produccion y Empleo indirecto en el resto de los sectores		716.9	59,311		222.4	16,657
Totales	122,129	2,111.7	61,534	26,881	643.6	17,357
Coeficientes		0.339	0.964		0.346	0.960

Fuente: Elaborado por el autor

Cuadro No. 10: Impacto en el sector primario y terciario en el 2007 (millones de dolares)

Subsectores	Trabajadora		Trabajador	
	Producción indirecta	Participación en el total	Producción indirecta	Participación en el total
Cultivo de cereales	25.4	11.4	72.2	10.1
Legumbres, raices y tuberculos	0.4	0.2	1.4	0.2
Frutas y nueces	0.3	0.1	1.1	0.1
Otros cultivos	10.6	4.8	30.6	4.3
Cria de animales	36.8	16.5	114.8	16.0
Servicios agricolas	5.4	2.4	15.4	2.2
Silvicultura	1.8	0.8	7.8	1.1
Pesca	16.7	7.5	49.3	6.9
Subtotal de SP	97.5	43.8	292.7	40.8
Comercio al por mayor	4.2	1.9	15.6	2.2
Comercio al por menor	2.0	0.9	7.5	1.1
Rep. y mantenimientos de vehiculo	0.2	0.1	0.8	0.1
Hoteles	1.3	0.6	5.3	0.7
Restaurantes	3.6	1.6	13.9	1.9
Transporte	20.7	9.3	74.3	10.4
Correo y telecomunicaiones	6.8	3.1	21.8	3.0
Intermediacion financiera y seguros	28.6	12.9	91.5	12.8
Actividades inmobiliarias y de alquiler	13.8	6.2	56.0	7.8
Informatica	2.7	1.2	8.5	1.2
Servicios empresariales	35.3	15.9	109.0	15.2
Administracion publica	5.6	2.5	20.0	2.8
Subtotal de Sector Terciario	124.9	56.2	424.2	59.2
Total en la economia	222.4	100.0	716.9	100.0

Fuente: Elaborado por el autor

Por su parte, en el ejercicio 2010 se muestra la perdida de una milésima en el coeficiente de producción indirecta en el colectivo femenino con respecto al obtenido en el ejercicio 2007, aunque todavía su impacto es superior al del colectivo masculino que también pierde 5 milésimas, ampliando este indicador observado en el cuadro No.11; esto supone una mejora considerable en el coeficiente de empleo indirecto que permite también superar en este aspecto al colectivo masculino, que ya en los trabajos de Minzer y Orozco (2017), entre los principales sectores generadores de empleos netos se encuentra el de la industria de alimentos, en el cual se posicionan bien las mujeres y adicional también estos autores presentan que entre los principales sectores absorbentes de empleo se encuentran los de agricultura y ganadería (cría de animales), ya analizados previamente.

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Cuadro No. 11: Impacto en la producción (millones de dolares), empleo directo e indirecto por trabajador y trabajadora en cada subsector secunadrio y otros sectores en el 2010

Subsectores	Trabajador			Trabajadora		
	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directa de cada sector	Empleo Indirecto	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directa de cada sector	Empleo Indirecto
Explotación de minas y canteras	999	134.3	151	130	25.5	29
Procesamiento de carnes y pescados	6,551	19.6	29	2,266	6.4	10
Procesamiento vegetal	1,025	24.4	17	301	7.2	5
Elaboración de productos lácteos	3,012	21.4	55	654	5.7	15
Producción de productos de molineria, almidón y otros productos alimenticios	10,535	77.7	192	3,954	24.7	61
Elaboración de bebidas	2,443	13.1	9	796	4.2	3
Elaboración de prendas de vestir y calzados	693	18.8	0	888	6.7	0
Elaboración de productos de madera	736	32.3	241	103	7.3	54
Elaboración de productos de papel y de impresión	2,293	52.6	96	1,090	16.6	30
Fabricación de productos químicos	436	76.1	15	162	21.3	4
Fabricación de productos farmacéuticos	323	11.2	0	301	4.1	0
Elaboración de productos plásticos y de caucho	1,271	111.4	30	308	26.3	7
Elaboración de cemento, cal y yeso	983	193.9	138	110	39.2	28
Vidrio y otros productos no metálicos	2,476	98.4	208	520	20.9	44
Metales comunes	95	118.4	14	14	25.8	3
Otras industrias manufactureras	5,236	680.4	41	1,406	262.8	16
Suministro y distribución de energía	2,292	96.3	99	319	35.0	36
Suministro, captación y distribución de agua	1,862	10.7	147	868	3.9	54
Construcción	81,085	127.6	896	12,252	46.1	324
Empleo indirecto en el resto de los sectores		961.3	59,220		310.4	18,342
Totales	124,345	2,879.8	61,598	26,443	900.2	19,064
Coeficientes		0.334	0.961		0.345	0.962

Fuente: Elaborado por el autor.

En el 2015 lo llamativo ha sido la caída en los coeficientes de producción y empleos indirectos en ambos colectivos, siendo las mujeres la más afectadas con 2.8 centésimas en la producción y 2.3 centésimas en el empleo al compararlos con los generados en el 2010 (ver cuadro 12). Este efecto fue explicado en el apartado anterior, es decir al medir la proporción de inversión asociada a las actividades cuyo componente femenino presenta un peso aunque diferenciado en menor proporción al de los hombres; propone una producción y el empleo de forma indirecta que al evaluar el impacto en los subsectores primarios y de servicios, resulte en visualizar el aporte de la mujer en el escenario productivo a partir de la especialización de trabajo que tengan en los subsectores del sector secundario o de transformación; y cuyas evidencias extraídas en los resultados demuestran la masculinización de dichas actividades.

En virtud de esta última medición, las mujeres contribuyeron fundamentalmente y sin lugar a duda en

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agroalimentarias panameñas (Valverde-Batista, 2022), significando un retroceso en el avance adquirido en el coeficiente de empleo indirecto obtenido en el ejercicio 2010 y que vuelve a favorecer al colectivo masculino, pasando las primeras de 0.962 a 0.939 y los segundos al registrar un coeficiente de 0.961 a 0.947; confluyendo en los niveles de producción indirecta, cuantificando para el colectivo femenino un coeficiente de 0.317 y para los hombres de 0.306, denotando que a pesar de lo planteado se mantiene la superioridad de la mujer en este indicador y valida la exposición de la FAO (Beaux, et al., 2017), que las mujeres al disponer de los mismos recursos productivos que los hombres, lograrían incrementar los rendimientos las explotaciones agrícolas entre un 20 a 30%, aportando a la llamada seguridad alimentaria en el mundo.

Cuadro No. 12: Impacto en la producción (millones de dolares), empleo directo e indirecto por trabajador y trabajadora en cada subsector secunadrio y otros sectores en el 2015

Subsectores	Trabajador			Trabajadora		
	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directa de cada sector	Empleo Indirecto	Empleo Directo	Impacto en la producción por compra e inversión y por empleo directa de cada sector	Empleo Indirecto
Explotación de minas y canteras	930	421.0	159	121	83.3	31
Procesamiento de carnes y pescados	7,450	26.4	27	2,577	8.5	9
Procesamiento vegetal	1,025	27.0	9	301	7.7	3
Elaboración de productos lácteos	3,259	26.1	42	707	6.7	11
Producción de productos de molineria, almidón y otros productos alimenticios	9,979	89.8	126	3,746	28.0	39
Elaboración de bebidas	2,856	14.6	7	930	4.5	2
Elaboración de prendas de vestir y calzados	531	22.2	0	681	7.1	0
Elaboración de productos de madera	829	52.2	184	116	11.2	39
Elaboración de productos de papel y de impresión	2,348	61.9	84	1,116	17.5	24
Fabricación de productos químicos	412	98.2	7	153	25.3	2
Fabricación de productos farmacéuticos	338	16.6	0	315	5.9	0
Elaboración de productos plásticos y de caucho	762	130.0	10	185	29.4	2
Elaboración de cemento, cal y yeso	2,539	419.4	218	285	85.3	44
Vidrio y otros productos no metálicos	3,181	166.1	296	668	34.7	62
Metales comunes	161	100.7	15	24	21.2	3
Otras industrias manufactureras	5,150	771.3	28	1,383	244.0	9
Suministro y distribución de energía	2,394	107.5	122	333	40.6	46
Suministro, captación y distribución de agua	1,818	15.2	124	847	5.8	47
Construcción	115,653	427.3	1,752	17,475	149.9	615
Empleo indirecto en el resto de los sectores		1,323.0	57,035		379.2	15,179
Totales	161,614	4,316.4	60,247	31,964	1,195.8	16,167
Coeficientes		0.306	0.947		0.317	0.939

Fuente: Elaborado por el autor.

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IV. Conclusiones

1. Que la participación de la mujer en el mercado laboral del sector secundario de transformación tiene una tendencia a la disminución, lastrado por las condiciones de la perdida en la capacidad productiva el sector primario panameño, relacionadas a la caída de las exportaciones agroalimentarias, en las cuales las mujeres tienen mayor oportunidad de trabajar; alejando su participación, es decir del 20%, de la media mundial expresada por la Fundación Mundial de Manufactura, cifrada en el 30%.
2. Que hay una relación directa en la tendencia a la baja entre la proporción de la Formación Bruta de Capital Fijo-fijada al colectivo femenino y la participación de la producción del sector secundario o de transformación, que pierden la primera hasta el 1.2% desde 2007 establecida en el 28%, mientras que en la segunda pierde 4 puntos porcentuales desde el 2007, que se fijó en 24%.
3. Que al evaluar el impacto que tiene el trabajo de la mujer en el sector secundario o de transformación, sobrepasa al del colectivo masculino, en sintonía con los trabajos presentados por la Human Rights Watch, el Banco Mundial y OIT.

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Implication of Fiscal Deficit Financing on External Debt Sustainability in Nigeria

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Abstract- The accumulation of debt for developmental purpose has failed to yield the desirable transformation. So, the study investigated the impact of fiscal deficit financing on external debt sustainability in Nigeria. The dual gap theory formed the basis of the study. Using annual time series data from 1981 to 2020 and the Autoregressive distributed lag technique, the study found that lagged external debt, exchange rate and fiscal deficit significantly impacts external debt servicing in Nigeria. Therefore, it was recommended that government should use external loans productively; public policy should be geared towards export promotion; and interest rate should be very low.

Keywords: fiscal balance, financing gap, sustainability, domestic resource gap, trade gap.

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Implication of Fiscal Deficit Financing on External Debt Sustainability in Nigeria

Olayide O. Olaoye [α] & Sunday O. Odumeru [σ]

Abstract- The accumulation of debt for developmental purpose has failed to yield the desirable transformation. So, the study investigated the impact of fiscal deficit financing on external debt sustainability in Nigeria. The dual gap theory formed the basis of the study. Using annual time series data from 1981 to 2020 and the Autoregressive distributed lag technique, the study found that lagged external debt, exchange rate and fiscal deficit significantly impacts external debt servicing in Nigeria. Therefore, it was recommended that government should use external loans productively; public policy should be geared towards export promotion; and interest rate should be very low.

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I. Introduction

Fiscal deficit is an important macroeconomic variable that gives signal about the level of vulnerability of the economy. Fiscal deficit exists when the planned total expenditure of government exceed the planned total revenue. Fiscal deficit is an indicator of the financial status of an economy. Therefore, the management of fiscal deficit is a crucial element of fiscal policy (Chukwu, Otiwu & Okere, 2020).

In developing economies, fiscal deficit has followed haphazard trends. Table 1.1 presents a six period trend of fiscal deficit in Brazil, Ghana, South Africa and Nigeria from 1991 to 2020. Table 1.1 shows that Brazil had an average deficit budget of ₦1.33million from 1991 to 1995 and maintained a budget deficit up until 2020 although it experienced fluctuations during this period. Ghana had an average budget deficit of ₦1.50million between 1991 and 1995. This kept increasing until 2001 where it had an average budget surplus of ₦0.19million. The budget surplus declined to a deficit of ₦0.69million between 2006 and 2010 and continued decreasing up until 2020. South Africa also had an average budget deficit of ₦0.81million between 1991 and 1995. This fluctuated over the years and sharply dropped to ₦1.13million between 2016 and 2020. Nigeria had an average budget surplus of ₦0.20million between 1991 and 1995 and it fluctuated and declined sharply to an average budget deficit of ₦0.25million from 2015 to 2020. Amongst these countries, Ghana had the highest average budget deficit of ₦1.50million between 1990 and 1995 while Nigeria had an average surplus of ₦0.20million. As at 2020, South Africa had the highest average budget deficit of ₦1.31million while Nigeria had the lowest deficit of ₦0.25million.

Period/ Country	1991-1995 (₦bn)	1996-2000 (₦bn)	2001-2005 (₦bn)	2006-2010 (₦bn)	2011-2015 (₦bn)	2016-2020 (₦bn)
Brazil	-1.33	-0.37	-0.60	-0.34	-1.53	-1.13
Ghana	-1.50	-1.74	0.19	-0.69	-0.66	-0.40
South Africa	-0.81	-0.31	0.03	-0.76	-0.76	-1.31
Nigeria	0.20	0.96	1.89	1.14	0.56	-0.25

Source: World Development Indicator (2020)

Goal 17 of the United Nations (UN, 2015) sustainable development goals (SDG) aims at partnership for the goals. In order to attain SDG 17 it is expected that the value of fiscal deficit must be low and sustainable. Even though Nigeria seems to be faring better than other developing countries in terms of fiscal deficit balance, fiscal deficit in Nigeria has been fluctuating at alarmingly rates (Musa, 2021). Fiscal balance growth rate increased from 13.29% in 1981 to 22.56% in 1990. Fiscal balance growth rate became negative (-100.81%) in 1995, but increased drastically to 2331.7% in 1996. Again, fiscal balance growth rate fell to 114.42% in 1997. Thereafter, fiscal balance rose sharply to 2353.23% in 1998. In 2000, there was a decline (-71.75%) and thereafter, fiscal balance growth rose to 82.69%. in 2009, fiscal balance growth plummeted to 1471.65% but fell drastically to 6.93% in 2010. As at 2020, fiscal balance growth stood at 20.88% and Nigeria has been consistently operating deficit financing since 2015 till date [Central Bank of Nigeria (CBN), 2021].

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Besides, in Nigeria, recurrent expenditure forms the larger chunk of fiscal deficit - 80 percent, while capital expenditure accounts for the remaining 20 percent (CBN, 2021). This condition seems to be at variance with the goal of achieving sustainable economic development.

Fiscal deficit could be financed locally or externally (Greg & Okpoiarikpo, 2015) through taxation, borrowing and monetization (Eke & Akujuobi, 2021). These sources of financing pose both short-run and long-run effects on the economy (Momodu & Monogbe, 2017). In both developed and developing countries, several measures have been taken in terms of policies to resolve fiscal imbalances (Amwe & Wuyah, 2015). However, many policies and programmes of government have resulted in tax increase and persistent public borrowing in order to meet budgetary demands (Momodu & Monogbe, 2017). One of such is the structural adjustment programme (SAP), which was embraced by many African countries in the 1980s. Notwithstanding, these economies have not experienced the desired level of economic transformation.

Borrowing could be from domestic or external sources (Adegboyo, Efuntade, & Efuntade, 2020). However, in case of developing countries where domestic saving is relatively low, governments have opted for external borrowing. Comparing the debt-to-GDP ratio in Nigeria with similar economies like Brazil (6.3%), India (9.5%), and South Africa (15.7%), it would be noted that the debt burden in Nigeria has worsened in recent years. The debt-to-GDP ratio increased from 16.3% in 2016 to 22.3% in 2020, while debt repayments-to-revenue reduced from 50.3% in 2016 to 83.0% in 2020 [Central Bank of Nigeria (CBN), 2021]. External debt burden incurred as a result of deficit financing reduces the purchasing power of citizens. This is because external debt is serviced in foreign currencies thereby increasing the units of local currencies that will exchange for a unit of foreign currencies; leading to an unfavourable exchange rate condition. Thus, fiscal deficit creates imbalance in the current account which triggers exchange rate appreciation and balance of payments disequilibrium. Hence, macroeconomic challenges such as huge debt burden, high inflation rate, heavy import dependence, high unemployment rateare generated (Amwe & Wuyah, 2015). For example, fiscal deficit rose by 137% from ₦2.36 trillion in 2017 to ₦5.60 trillion in 2021 and debt service rose by 17% from ₦2,678.81 billion in 2020 to ₦3,124.38 billion in 2021 (CBN, 2021).

Considering the risk of borrowing and debt repayment in foreign currencies, the impelling goal should be to reduce debt burden. However, due to the alarming rate of widening of fiscal deficit and debt repayment obligation, the sustainability of the Nigerian economy in terms of external debt is questionable. Therefore, this study aims at examining the level of influence of fiscal deficit on external debt in Nigeria. Specifically, the current study aims at:

i. Ascertaining the strength of the relationship between fiscal deficit and external debt in Nigeria;
ii. Determining the directional link between fiscal deficit and external debt in Nigeria;
iii. Examining the impact of fiscal deficit on external debt sustainability in Nigeria.

Previous studies in this area are mainly focused on the relationship between fiscal deficit or external debt with other macroeconomic variables such as real gross domestic product (GDP), private and public investment and economic development. For instance Akanmobi & Unachukwu (2021) explored the impact of budget deficit on gross domestic product (GDP) growth in Nigeria; Musa (2021) examined the effect of deficit financing on GDP in Nigeria; Eke & Akujuobi (2021) investigated the effect of public debt on economic growth in Nigeria; while Greg and Okoiarikpo (2015) examined the impact of political considerations and institutional quality under different administrative regimes on the growth-performance of fiscal deficit. This study stands out by examining the impact of fiscal deficit on external debt sustainability and possible feedback effects from external debt to fiscal deficit.

The study covered forty-year period; from 1981 to 2020. The start year enabled robust study of the impact of relevant policy interventions on the Nigerian economy and the end year afforded the researcher an up-to-date investigation. Time series data obtained from the Central Bank of Nigeria Statistical Bulletin (2021) and the World Development Indicators (2021) was used. The study is divided into five sections. After this introductory section, Section Two contains the review of literature. Section three handles the theoretical framework and model specification, while section four presents the results and discussion of findings. Finally, section five concludesthe study with policy recommendations.

II. Review of Literature

Fiscal deficit occurs when public expenditure on goods and services exceeds public revenue from taxation and all other sources in a particular year (Akanmobi & Unachukwu, 2021). Fiscal deficit differs from public debt; which arises from the accumulation of fiscal deficits. Usually government borrows to finance the gap between public expenditure and public revenue. Thismay lead to serious economic issues like crowding-out effect, higher interest payments and huge debt burden (Boyce, 2020).

Fiscal deficit (budget deficit) implies that in a fiscal year, government plans to spend more funds than she intends to generate. On the other hand, budget surplus, which is a plan to generate more public revenue than expenditure within a fiscal year, seems to be more

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logical. Accumulated surpluses could be used during periods of economic recessions or war (Boyce, 2020). However, fiscal deficit is not necessarily an economic problem because government can use deficit financing as a technical tool to solve other macroeconomic problems within the economy. Fiscal deficit incurred as a result of consumption expenditures may be harmful to an economy, while fiscal deficit due to investment expenditures may be beneficial to an economy. For example, public capital expenditure on acquisition of infrastructure such as construction of roads, raillines, building of dams for the generation of electricity and water supply will yield returns not only in the present. Future generations will benefit from such investment expenditures if properly maintained. This leads to the concept of sustainability.

The concept of sustainability deals with the fact that current production and consumption activities should be done in such a way that the resources will still be available for future generations. Fiscal deficit financing leads to government decision to increase taxes, borrow or increase spending. These decisions have multiplier effects in the economy, which may be undesirable to the citizens. In the short-term, these government decisions may seem to be the way-out but the long-term effect may be detrimental to the economy. For example, increased government spending aimed at stimulating output may prove sticky. Government capital spending in building schools or health centres may necessitate further recurrent expenditure in the maintenance of such. Also, public response to cyclical fluctuations, for instance increase in government spending on unemployment benefits during economic contraction may continue after economic recovery if citizens are unwilling to take up paid jobs. Besides, interest payment on debt due to continuous deficit financing may be burdensome.

Keynes (1936) opined that increase in government spending stimulates aggregate demand and consequently spurs economic growth. Therefore, Keynes advocates for fiscal deficit financing. According to him, fiscal deficit financing will stimulate aggregate demand and domestic production; thereby crowding in investment and reducing unemployment. However, fiscal deficit can be harmful when spending is not directed towards productive activities which would lead to expansion in output (Adegboyo, Efuntade & Efuntade, 2020). So, deficit financing should be a short-run phenomenon.

On the other hand, Akanmobi and Unachukwu (2021) argued from the Ricardian perspective that fiscal deficit financing has no effect on economic growth. The authors are of the view that increases in government spending leads to decrease in public savings, which will in turn lead to increase in desired private savings. Hence, desired national savings and investment remains the same in a closed economy. In an open economy, if the desired private savings increases so much that there would be no need for external borrowing; fiscal deficit will also have no effect on the economy (Akanmobi & Unachukwu, 2021).

The neoclassical view is that increase in fiscal deficit will spur the overall consumption level in an economy; leading to a fall in national savings. This will give rise to a higher interest rate in a closed economy. Investment is adversely affected and economic activities reduce. In an open economy, increase in fiscal deficit will amount to increase in capital inflow; leading to exchange rate appreciation, reduction in net exports and crowding out of investment. Thus, fiscal deficit adversely impacts on the economy (Musa, 2021).

The dual-gap theory argues that the development of an economy depends on the level of investment; which in turn requires domestic savings. In a situation where domestic saving is insufficient to meet the investment needs in an economy, external borrowing will be necessary. Hence, the size of external debt will be equal to the domestic resource gap.

Many studies have examined the effect of fiscal deficit on economic growth but there is dearth of literature on the link between fiscal deficit and external debt. The empirical review therefore presents studies showing the effect of fiscal deficit on economic growth.

Akanmobi & Unachukwu (2021) estimated three models to examine the macroeconomic effects of fiscal deficit in Nigeria. The study used the autoregressive distributed lag (ARDL) approach which revealed that fiscal deficit significantly and positively impacted economic growth in Nigeria. Increase in government deficit spending does not harm economic growth. Also, interest rate significantly and positively influenced economic growth while inflation significantly but negatively impacted economic growth in Nigeria. Similarly, Musa (2021) analyzed dataset for the period 1980-2019 and found that fiscal deficit significantly and positively influenced economic growth in Nigeria. In addition, inflation significantly but negatively impacted economic growth. Therefore, the study concluded that fiscal deficit financing is ineffective in achieving sustainable growth. The rationale behind this is that despite huge government spending over the years, economic growth has been very low and sluggish, while inflation rate has been rising. The growth recorded in the Nigerian economy seems to be reflective of rising prices (inflation). The poor outcome of fiscal deficit financing has been blamed on poor policy implementation, wasteful spending, and high level of corruption among others.

Chukwu, Otiwu and Okere (2020) investigated the impact of fiscal deficit on macroeconomic variables in Nigeria; from 1980 to 2012. Using two-stage least square technique, the study found that fiscal deficit negatively and significantly impacted GDP growth rate, real private investment, inflation rate, real exchange rate

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but positively and significantly impacted real interest rates. Thus, the study concluded that due to the negative impact on economic growth, fiscal deficit should be reduced. Adegboyo, Efuntade, & Efuntade (2020) used ARDL to examine the impact of fiscal deficit on economic growth in Nigeria for the period 1980 to 2018. The study found that fiscal deficit and exchange rate significantly but negatively impacted economic growth. This finding agrees with Chukwu, Otiwu and Okere (2020) but contradicts Akanmobi and Unachukwu (2021) and Musa (2021). This result implies that the Nigerian economy deteriorates as more deficits are accumulated. This position was maintained by Miftahu, Rosini, & Tunku (2017), who examined the effect of fiscal deficit on the Nigerian economy. Using the VAR technique, the study found that fiscal deficit negatively impacted economic growth rate.

Momodu & Monogbe (2017) investigated the factors responsible for public financing gap in Nigeria from 1983 to 2016. Using the Error Correction Mechanism (ECM), the study found that both public revenue and public spending positively and significantly impacted budget deficit. This suggests that as public revenue and public spending increase, budget deficit also increases, which contradicts the a priori expectation. Furthermore, the study found that economic development positively and significantly influenced budget deficit. This implies that increase in developmental projects widens public financing gap (fiscal deficit) in Nigeria. In another study, Ibrahim (2017) investigated the effect of fiscal deficit on money demand using the ECM model. The study found short-run and long-run positively significant relationship between money demand and fiscal deficit. Therefore, the study suggested emphasis on the efficiency of public expenditure.

Wuyah & Amwe (2015) analyzed the impact of fiscal deficit on some selected macroeconomic variables in Nigeria for the period 1970 to 2013. Using the Vector Auto-regression (VAR) technique, the study found that fiscal deficit positively and significantly impacts inflation but negatively and significantly impacts money supply and exchange rate. The study concluded that fiscal deficit is a major cause of macroeconomic instability in Nigeria. Further still, Greg and Okoiarikpo (2015) compared the impact of fiscal deficit on economic growth during the military and democratic regimes in Nigeria. The Chow test result revealed that fiscal deficit significantly impacted economic growth during the military regime, while it had insignificant impact on economic growth during the democratic regime. Interest rate had insignificant impact on economic growth during both regimes, while gross fixed capital formation significantly impactedeconomic growth during both regimes.

Osuka & Achinihu (2014) examined the impact of fiscal deficit on macroeconomic variables in Nigeria for the period 1981 to 2012. Granger causality result revealed unidirectional causality flowing from GDP to fiscal deficit. However, there was no causal relationship between fiscal deficit and interest rate, fiscal deficit and inflation and fiscal deficit and exchange rate. The study noted that fiscal deficit poses significant impact on macroeconomic performance in Nigeria by crowding in investment through reduction in interest rate. Hence, public spending should be directed towards capital goods in order to achieve desirable economic growth and development.

In summary, existing studies provide evidence to the fact that fiscal deficit significantly impacts the economy. However, there is need for further study to establish whether the impact is harmful or beneficial. Also, empirical studies have revealed the key role of fiscal deficit in causing macroeconomic instability, hence the need to ascertain the level of influence of fiscal deficit on the economy and map out the route to achieving sustainable economic development.

III. Theoretical Framework and Model Specification

This study draws from the dual-gap theory which holds that due to low domestic saving and the resultant financing gap, external borrowing is inevitable in an economy in order to meet budgetary needs. Therefore, external debt (EDT) can be expressed as resulting from private domestic resource gap (I - S), public domestic resource gap (G - T) and trade gap (M - X). Considering the fact that external debt is mostly denominated in foreign currency and attracts interest payment, the study will allow for the impact of exchange rate (EXR) and interest rate (INT). Hence, the functional form of the model is presented as:

$$EDT = f(FSD, ISG, CAD, EXR, INT) \quad 3.1$$

In econometric form, the ARDL model can be specified thus:

$$EDT_{i,t} = \alpha_0 + \alpha_1 \Delta \ln FSD_{i,t} + \alpha_2 \Delta \ln ISG_{i,t} + \alpha_3 \Delta \ln CAD_{i,t} + \alpha_4 \Delta \ln EXR_{i,t} + \alpha_5 \Delta \ln INT_{i,t} + \beta_1 \ln FSD_{i,t} + \beta_2 \ln ISG_{i,t} + \beta_3 \ln CAD_{i,t} + \beta_4 \ln EXR_{i,t} + \beta_5 \ln INT_{i,t} + \mu_{i,t} \quad 3.2$$

Where EDT represents external debt, FSD represents fiscal deficit or public financing gap (G –T), ISG represents private financing gap (I – S), CAD represents current account deficit (M – X), EXR represents exchange rate, INT represents interest rate. α_0 is the intercept, α_1 - α_5 represents the elasticities of the corresponding variables. Δ is the difference operator and is the error term; representing all other

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variables influencing external debt which are not captured in the model.

EDT is a measure of public debt servicing in billion naira, FSD is captured by the overall surplus/deficit in billion naira, ISG is the difference between gross capital formation and saving; measured in billion naira, CAD is the difference between imports and exports; measured in billion naira. EXR is the rate at which a unit of the local currency exchanges for the dollar. EXR is measured as the local currency units per dollar. INT is the rates of return on investment set by the monetary authority. INT is measured as the difference between the lending rate and deposit rate.

To achieve the stated objectives, annual time-series data from the period 1981 to 2020 was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2021). The study expects apriori that the wider the fiscal deficit, private financing gap and trade gap, the higher the external debt burden based on the dual-gap theory. FSD, ISG, CAD and EXR are expected to be positively related to external debt while INT is expected to be negatively related to external debt.This is because the greater the value of foreign currency relative to the local currency, the more the liability of external debt and the poorer the capacity for debt repayment. On the other hand, the lower the interest rate, the greater the desire to accumulate more external debt.

IV. Results and Discussion

The study started with descriptive statistics to know the characteristics of the variables. Table 4.1 presents the summary statistics for external debt (EDT - dependent variable) and the independent variables – current account deficit/balance (CAD), fiscal deficit/ balance (FSD), exchange rate (EXR), real interest rate (INT), and investment-savings gap (ISG). The standard deviations of CAD, EDT, FSD, EXR, INT, and IS are greater than 1. This means that the level of variance in the data for current account deficit, external debt, fiscal deficit, exchange rate, investment- savings gap, and real interest rate are high. The high variance indicates that the means of current account deficit, external debt, fiscal deficit, exchange rate, investment-savings gap, and real interest rate are not reliable representatives of their individual observations. From 1981 to 2019, the minimum and maximum values for current account deficit, external debt, fiscal deficit, exchange rate, investment-savings gap, and real interest rate were -7.22 and 21.97 percent of GDP, 1.26 and 59.82 percent of GDP, 0.61 and 306.92 naira per dollar, -5.99 and 0.85 percent of GDP, -65.86 and 18.18 percent, and -22.04 and 7.35 percent of GDP respectively.

Table 4.1: Descriptive Statistics

Variables	CAD	EDT	EXR	FSD	INT	IS
Mean	2.87	20.52	100.02	-2.34	0.35	-4.31
Median	2.12	12.10	100.80	-2.06	4.31	-2.85
Maximum	21.97	59.82	306.92	0.85	18.18	7.35
Minimum	-7.22	1.26	0.61	-5.99	-65.86	-22.04
Std. Dev	6.04	20.24	89.52	1.62	14.62	5.74
Skewness	1.03	0.67	0.76	-0.26	-2.63	-1.07
Kurtosis	4.27	1.96	3.02	2.49	12.23	4.52
Jarque-Bera	9.49	4.69	3.71	0.87	183.66	11.20
Probability	0.0087	0.96	0.16	0.65	0.00	0.0037
Sum	111.79	800.27	3900.76	-91.23	13.52	-168.07
Sum Sq. Dev	1388.53	15571.92	304542.6	99.25	8122.43	1252.16

Source: Author's Computation (2022)

Table 4.2 shows the results of correlation, which captured objective one. The correlation coefficients of external debt (EDT) with fiscal deficit/balance (FSD), current account deficit/balance (CAD), exchange rate (EXR), real interest rate (INT), and investment-savings gap (ISG) are negative. This implies that an inverse relationship exists between external debt and the independent variables - Nigeria's fiscal balance, current account balance, naira to dollar rate, real interest rate, and investment-savings gap. The correlation coefficients further show the strengthof the relationship. Fiscal deficit and exchange rate are moderately related to external debt, while current account deficit, real interest rate and investment-saving gap are weakly related to external debt.

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Table 4.2: Correlation Matrix Result

	EDT	FSD	CAD	EXR	INT	ISG
EDT	1.00					
FSD	-0.59	1.00				
CAD	-0.01	0.43	1.00			
EXR	-0.49	0.25	0.12	1.00		
INT	-0.09	0.05	0.20	0.38	1.00	
ISG	-0.06	-0.22	-0.62	-0.11	-0.08	1.00

Source: Author's Computation (2022)

The study proceeded to examine the level of stationarity of the variables because most macroeconomic variables have been found to be non-stationary at level (Engle & Granger, 1987). Table 4.3 shows that external debt (EDT) and exchange rate (EXR) are stationary at first difference, while current account deficit/balance (CAD), fiscal deficit/balance (FSD), real interest rate (INT), and investment-savings gap (ISG) are stationary at level. This is because the absolute values of the computed ADF test statistics are greater than the absolute value of the tabulated ADF critical values of the variable at 5% level of significance.

Table 4.3: Augmented Dickey Fuller Test Results

Variable	Level Test Statistics	Critical Value @5%	Prob. Value	1st Diff.Test Statistics	Critical Value @5%	Prob. Value	Integration Rank
CAD	-3.18	-2.94	0.03**	-	-	-	I(0)
EDT	-1.44	-2.94	0.55	-4.48	-2.94	0.00***	I(1)
EXR	1.40	-2.94	0.99	-4.27	-2.94	0.00***	I(1)
FSD	-2.99	-2.94	0.05**	-	-	-	I(0)
INT	-7.25	-2.94	0.00***	-	-	-	I(0)
ISG	-4.58	-2.94	0.00***	-	-	-	I(0)

*Note: ** and *** represent 5% and 1% significance levels respectively*
Source: Author's Computation (2022)

Then the study proceeded to ascertain the directional flow between the variables. Table 4.4 presents the result of the granger causality test which captured objective two. Table 4.4 shows that fiscal deficit which is the key independent variable is a significant predictor of changes in Nigeria's external debt as well as interest rate. The fact that there is no causality between FSD and the independent variables - ISG, EXR suggests that ISG and EXR have strong exogeneity in the external debt model.

Table 4.4: Granger Causality Test Results

Null Hypothesis	F-Statistics	Prob. Value	Remark
FSD to EDT EDT to FSD	4.01 1.14	0.03** 0.33	Unidirectional causal flow from FSD to EDT
CAD to EDT EDT to CAD	4.79 0.11	0.02** 0.90	Unidirectional causal flow from CAD to EDT
ISG to EDT EDT to ISG	1.55 0.30	0.23 0.75	No causality
INT to EDT EDT to INT	0.57 3.13	0.57 0.06*	Unidirectional causal flow from EDT to INT

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EXR to EDT EDT to EXR	1.51 0.05	0.24 0.95	No causality
INT to FSD FSD to INT	2.17 9.94	0.13 0.00***	Unidirectional causal flow from FSD to INT

*Note: *, ** and *** represent 10%, 5% and 1% significance levels respectively*
Source: Author's Computation (2022)

To establish the existence of long-run relationship in the series, ARDL Bounds test was used. If the F-statistic is greater than the critical value there is long-run relationship among the variables. From Table 4.5, the F-statistic is greater than the critical values even at the 1% significance levelhence, the existence of long-run relationship.

Table 4.5: ARDL Bound Test

Test Statistic	Value	k
F-statistic	5.29	6
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's Computation (2022)

Table 4.6 presents the result of the ARDL test. The Durbin-Watson statistic 1.932 is greater than the R^2 0.889 and less than 2. It shows that there is no false regression result and absence of serial correlation respectively. The probability value of the F-statistic is less than (<) 0.01. This means that all the predictor variables EDT(-1) FSD, CAD, INT, ISG, and EXR are jointly significant in explaining variations in external debt in Nigeria. The R-squared value is 0.889. This implies that approximately 89% of the changes in the dependent variable is explained or accounted for by EDT(-1) FSD, CAD, INT, ISG, and EXR.

Table 4.6 shows that external debt in the previous year positively and significantly impacted external debt in the current year at the 1% significance level. This implies that 1% increase in external debt in the previous year will lead to an approximately 0.76% rise in external debt in the current year. Exchange rate negatively and significantly impacted external debt in Nigeria at the 10% significance level. This implies that 1% increase in the naira to dollar rate will lead to an approximately 0.03% reduction in external debt. This tally with the correlation result and also testifies to the fact that less importation and more exportation will reduce the trade gap arising from exchange rate exposure and consequently reduce external debt. However, the causality test result shows that exchange rate does not directly impact external debt.

Current account deficit/balance negatively but insignificantly impacted external debt. 1% increase in CAD will lead to an approximately 0.16% decrease in external debt. The data on CAD obtained from the CBN's statistical bulletin shows that the years of surplus exceeds the years of deficit and this is due to huge gains from oil trade. This result is best interpreted in termsof current account surplus and external debt. By implication, efforts to close deficits or increase surpluses in current account will reduce external debt in Nigeria.

FSD negatively and significantly impacted external debt at the 5% significance level. The result shows that 1% increase in FSD will lead to an approximately 3.04% decrease in external debt. The result further shows that FSD is the key predictor variable. This result aligns with the correlation matrix and the granger causality. Moreso, the standard deviation from the descriptive statistics which is 1.62 and is relatively not far from 1, shows that FSD is fairly stable. The negative relationship between external debt and fiscal deficit suggests that if excess expenditure is productively used, external debt burden will be significantly reduced. In addition, since external debt variable entered the model with positive values, in absolute terms, it can beinterpreted that 1% reduction in FSD will reduce external debt in Nigeria by 3.04%. There was no significant impact between external debt and INT but the coefficient was positive. This showsthat real interest rate is positively associated with external debt. This implies that as external debt increases, interest rate increases. This will further expand the investment-saving gap because literature supports an inverse relationship between interest rate and investment. Also, no significant impact existed between external debt and ISG, whose coefficient was negative. This shows that an indirect relationship exists between external debt and investment. Therefore, external debt will impact investment through the influence of interest rate.

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Table 4.6: Auto regressive Distributed Lag (ARDL) Regression Results

Variable	Coefficient	Prob. Value
C	0.20	0.95
EDT(-1)	0.76	0.00***
EXR	-0.03	0.05**
CAD	-0.16	0.61
FSD	-3.04	0.01***
INT	0.15	0.32
ISG	-0.33	0.24
R-squared 0.89 Adjusted R-squared 0.87	F-statistics 41.68 Prob (F-statistics) 0.00***	Durbin-Watson stat. 1.93

*Note: ** and *** represent 5% and 1% significance levels respectively*
Source: Author's Computation (2022)

V. Conclusion and Recommendations

Based on the dual gap theory, the study examined the impact of fiscal deficit, private financing gap, current account deficit and other control variables on external debt in Nigeria; from 1981 to 2020. Correlation analysis, granger causality test and ARDL results showed that fiscal deficit is astrong predictor of external debt in Nigeria. The study concludes that fiscal deficit, exchange rate, previous debt profile significantly impacts external debt servicing in Nigeria. Hence, government should ensure that excess expenditure leading to fiscal deficit should be efficiently used for productive and income generating public investments. Public policy should be directed towards export promotion in order to check the exposure to exchange rate fluctuations and devaluation effects on import dependent economies like Nigeria. Finally, in order to close the investment-saving gap, interest rate should be reduced.

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"We' re Like them" Conjunction between the Claimed Past, Sense of Unity and Globalized Trade in the Atacamas/Atacameño Exchange Fairs

By Jorge D'orcy Sáez

Abstract- This work is the result of research that we have carried out between 2009-2019 on the exchange fairs or also called barter fairs that occur in the Andean area surrounding in the triple border between Argentina, Bolivia and Chile. These fairs are scheduled and organized autonomously by a group of cross-border indigenous organizations of the Atacama/ Atacameño people-nation. Despite the economic, social and political changes that have fractured the connection and relationships of this people, the Atacamas/Atacameños show the ability to intervene in their contexts, adopt and create their own forms of integration, connection and exchange. Thus, they incorporate new practices of socio-economic linkage into their traditions, such as the increase in globalized merchandise and the use of money for the purpose of trade, but they also show a special interest in maintaining a sense of Atacama/Atacameño unity in the face of restrictions, filters and border barriers that have been imposed by States.

Keywords: *atacama/atacameño, exchange fairs, people of the fairs, stigmatization.*

GJHSS-E Classification: *DDC Code: 332.5 LCC Code: HF1019*



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"We' re Like them" Conjunction between the Claimed Past, Sense of Unity and Globalized Trade in the Atacamas/Atacameño Exchange Fairs

"Nosotros Somos Como Ellos" Conjunción Entre El Pasado Reivindicado, Sentido de Unidad y Comercio Globalizado en las Ferias de Intercambio Atacamas/Atacameñas

Jorge D'orcy Sáez

Resumen- El presente trabajo es el resultado de investigaciones que hemos realizado entre el 2009-2019 sobre las ferias de intercambio o también denominadas ferias de trueque que ocurren en el área andina circundante al trifinio entre Argentina, Bolivia y Chile. Estas ferias son agendadas y organizadas de manera autónoma por un grupo de organizaciones indígenas transfronterizas del pueblo-nación atacama/atacameño. A pesar de los cambios a nivel económico, social y político que han fracturado la conexión y relaciones de este pueblo, los atacamas/atacameños muestran la capacidad de intervenir en sus contextos, adoptar y crear sus propias formas de integración, conexión e intercambio. Así pues, incorporan a sus tradiciones nuevas prácticas de vinculación socio-económicas como el aumento de mercancías globalizadas y uso de dinero con el propósito de comerciar, pero también muestran un interés especial de mantener un sentido de unidad atacama/atacameño ante las restricciones, filtros y barreras limítrofes que han impuestos los Estados-nacionales. En este trabajo nos enfocamos principalmente en los cambios en la tradición comercial atacama/atacameña; también en la construcción de un sentido de identidad como grupo indígena, feriante y viajero; y finalmente cómo las administraciones oficiales en los límites nacionales mantienen ciertos niveles de estigmatización a la circulación de los feriantes atacamas/atacameños.

Palabras claves: atacama/atacameño, ferias de intercambio, feriantes, estigmatización.

Abstract- This work is the result of research that we have carried out between 2009-2019 on the exchange fairs or also called barter fairs that occur in the Andean area surrounding in the triple border between Argentina, Bolivia and Chile. These fairs are scheduled and organized autonomously by a group of cross-border indigenous organizations of the Atacama/ Atacameño people-nation. Despite the economic, social and political changes that have fractured the connection and relationships of this people, the Atacamas/Atacameños show the ability to intervene in their contexts, adopt and create their own forms of integration, connection and exchange. Thus, they incorporate new practices of socio-economic linkage into their traditions, such as the increase in globalized merchandise and the use of money for the purpose of trade, but they also show a special interest in maintaining a sense of Atacama/Atacameño unity in the face of restrictions, filters and border barriers that have been imposed by States. In this work we focus mainly on the changes in the Atacama/Atacameño commercial tradition; also in the construction of a sense of identity as a fairground and traveling group; and finally how the official administrations in the national limits maintain certain levels of stigmatization to the circulation of the Atacama/Atacameños fairgrounds.

Keywords: atacama/atacameño, exchange fairs, people of the fairs, stigmatization.

I. Introducción

Donde se topa la triple frontera entre Argentina, Bolivia y Chile, desde hace más de dos décadas se están realizando una serie de ferias comerciales organizadas por agrupaciones atacamas/ atacameñas,[1] esto con el propósito de reivindicar y dar continuidad a antiguas tradiciones comerciales -algunas basadas en el trueque- y practicadas por viajeros comerciantes llamados arrieros y llameros (Sanhueza, 1992; Molina 2011; D'Orcy, 2021). Muchos de estos viajeros-comerciantes eran de origen puneño; es decir que provenían de las tierras altas de Atacama conocida también como la Puna.

Durante la época colonial y gran parte de las repúblicas, la gente de la Puna fueron transportistas claves para conectar la producción andina -como por ejemplo la plata de Potosí- con el resto del mundo y viceversa (Conti y Sica, 2009). Su conocimiento sobre rutas, climas, cargas, sogas, amarres y animales fue importante para la movilidad e intercambio, tanto así que su oficio por siglos fue considerado una especialidad. (Sica, 2010; Conti, 2011).

Sin embargo, a medida que se consolidaron los poderes estatales a través de la repartición de la zona atacameña en territorios nacionales, imposición de

[1] El pueblo-nación atacama/atacameño se considera transfronterizo. En Argentina a nivel provincial existe el reconocimiento oficial como atacamas a las comunidades en el oeste de la provincia de Jujuy. Sin embargo, hay un número considerable de comunidades en las provincias de Salta y Catamarca que se auto reconocen también como atacamas. Por su parte grupos en Sud López, departamento de Potosí, Bolivia no tienen reconocimiento oficial como atacameños o atacamas, pero hay comunidades muy cerca de las líneas limítrofes con Argentina y Chile que también se auto denominan atacameños. En Chile, en el oriente de la Región de Antofagasta, la mayoría de las comunidades indígenas están reconocidas por el Estado como atacameñas o lickan-antay. En los últimos 20 años la designación lickan-antay ha cobrado relevancia entre los atacamas/atacameños de los tres países.

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nuevas políticas-económicas y especialmente el reforzamiento de límites y puestos fronterizos, estos provocaron el decaimiento de las prácticas socio-comerciales andinas e incluso su prohibición.

Aproximadamente desde los años 70 del siglo XX los arrieros y llameros fueron considerados contrabandistas[2], muchos fueron perseguidos y arrestados, sus mercancías decomisadas y ellos mismos fueron testigos de cómo sus animales eran sacrificados e incinerados por agentes sanitarios hasta que finalmente los arrieros y llameros dejaron de viajar y cruzar las fronteras en los primeros años del siglo XXI (Molina 2010).

A pesar que este trauma cortó bruscamente siglos de relaciones socio-históricas, esto no evitó que en la memoria atacameña-puneña quedaran profundamente grabados con gran admiración las actividades de los arrieros y llameros, no solo como comerciantes de otra época, sino que esta figura recobró importancia y se convirtió en una parte representativa del pueblo atacama/atacameño a pesar que la práctica ya no existe. Los atacameños, especialmente los de la Puna se siguen considerando un grupo viajero y comerciante.

A finales del siglo XX iniciaron con mayor fuerza los procesos de reconstrucción indígena y de redefinición de fronteras étnicas en Argentina, Bolivia y Chile (Choque y Mamaní, 2001; Gündermann, 2002). Este proceso fue utilizado por grupos de atacamas/ atacameños para reivindicarse como poblaciones indígenas de un larga pasado en lo que consideran su territorio. Sin embargo, la condición indígena quedó estrictamente establecido dentro de las condiciones dadas por los Estados. Los atacamas/atacameños tuvieron que amoldarse a los nuevos requerimientos legales, y así las antiguas formas de organización comunitaria en base a familia o ayllú, dieron paso a modelos de asociación urbano-estatales propuestas desde instituciones de gobierno.

Se creó una nueva forma de comunidades y organizaciones indígenas las cuales muchas obtuvieron reconocimiento por parte de los Estados en el nuevo contexto socio-político. Las mismas, se reorganizan bajo los marcos oficiales de legalidad e iniciaron una serie de actividades concernientes a expresar sus formas culturales e identidad. Precisamente una de ellas fueron la creación Ferias de Intercambio o Ferias de Trueque que a diferencia del arrieraje y llamerismo es una actividad que no está prohibida, no viola ninguna ley, pero está bajo la observación minuciosa de instituciones estatales como aduanas, gendarmería, policía, servicios sanitarios y migración (D'Orcy, 2021: 166).

Si bien las ferias en la actualidad son una importante articulación de encuentro entre las comunidades y organizaciones atacamas/atacameñas de Argentina, Bolivia y Chile las mismas son de reciente creación. Aunque es importante destacar que para los atacamas/atacameños los antecedentes de estas ferias provienen de las prácticas arrieras y llameras de generaciones atrás de las cuales se sienten herederos.

Sin embargo, a pesar que esta idea de práctica tradicional está fuertemente enraizada en el imaginario de los feriantes atacameños -especialmente en lo que se refiere al trueque de productos del campo-, pero estas ferias se encuentran inundadas de mercancías industrializadas más que los frutos de la tierra. Lo que más se comercializa es lo que sale de las fábricas de diferentes partes del mundo.

De ese modo la feria es la carretera de conexiones globales para la adquisición de mercancías del mercado mundial. Estas mercancías llegan a través de otros caminos hacia consumidores más allá de los gigantescos centros de distribución ubicados en las capitales. La feria acorta distancia, la posibilidad de obtener algunas mercancías fabricadas en China también ocurre en puntos recónditos de los Andes sobre los 4000 m.s.n.m. como lo es Hito Cajón (frontera Bolivia-Chile). Así pues, la feria no solo conecta a un pueblo, sino que conecta mercados y mercancías internacionales en que ya no solo está involucrado el trueque, muchas veces la operación que más se usa para la adquisición de mercancías es la compra-venta.

Las Ferias de Intercambio, Ferias de Trueque o Ferias de Intercambio de Productos Andinos son otra vía por donde se conectan mercancías industrializadas promovidas por la globalización neoliberal. Pero a pesar del discurso de comercio libre y global, es muy probable que este comercio no tenía pensado que una imperceptible parte de la demanda y distribución se comercializara en pequeñas ferias como estas, en que las mercancías y productos son dedicados a la Pachamama y Ancestros a través de ceremonias andinas. Así pues, las ferias de intercambio o de trueque son una ruta no planificada en el sistema de producción-distribución-consumo capitalista.

Precisamente por tratarse de otro camino que no tenía trazado el sistema, en los puestos fronterizos existe una especie de estigmatización de los feriantes y las ferias. Cuando se trata de atacamas/atacameños cruzando fronteras, los ojos de la administración en muchas ocasiones se vuelven sumamente fiscalizadores.

A pesar que los atacamas/atacameños consideran que son un solo pueblo y que están en su territorio, pero no dejan de percibir a los puestos fronterizos como obstáculos para mantener las relaciones histórico-culturales y el intercambio de

[2] Las detenciones y arrestos de arrieros y llameros por parte de policías y tribunales aduaneros cubrieron parte de las noticias de primera plana en los diarios regionales. Ver: "Contrabando de carne desde Salta, 11 detenidos" *El Mercurio de Calama*, página 1 del 18 de mayo de 1985. Año XVIII, N°6.274

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mercancías. Esto algunas veces ha generado conflictos entre feriantes y funcionarios, en que los atacamas/atacameños consideran que no se les permite ser indígena-andino en su propia tierra.

El presente trabajo trata de enfocar su interés en las ferias de intercambio o trueque específicamente en las modificaciones que ha hecho el pueblo atacama/ atacameño para mantener sus relaciones socio-históricas y cómo se generan otras rutas del comercio global en espacios considerados secundarios o periféricos y como perciben los atacamas/atacameños los puestos fronterizos. El estudio se basa en el análisis de experiencias, relatos y entrevistas de feriantes obtenidas durante ferias entre el 2009 y 2019. Se complementa está información con revisión bibliográfica sobre tradición arriera del pasado y ferias actuales.

El siguiente trabajo se divide en 5 apartados y las conclusiones finales.

1. De arrieros-llameros a feriantes autónomos

En 1993, ocurre una de las primeras ferias de trueque. Atacamas de Catua (Argentina) junto con atacameños San Pedro de Atacama y Toconao (Chile), reinician una serie de encuentros familiares. Como resultado de estos, decidieron renovar los contactos e intercambios, pero utilizando otras alternativas ya que el arrieraje y llamerismo habían recibido fuertes golpes que prácticamente lo habían exterminado:

> "*Nosotros decidimos hacer una feria, porque ya no se podía venir con los animales, ¿viste? A los arrieros, no los dejaban pasar, les quemaron toditos los animales y nosotros queríamos seguir la tradición como era antes, de cambalachar, de cambiar. Así que pensamos en hace' las ferias, en venir y encontrarnos con los familiares, así como era antes, mantener lo que nos enseñaron los abuelos y lo hicimos. Porque tenemos familiares en San Pedro* [de Atacama] *en Toconao y en Catua. Primero, nosotros vinimos acá* [San Pedro de Atacama], *y después*, *ellos fueron para allá"* [Catua]. (Atacama N°1).

La reorganización de ferias indica que, los grupos locales buscan nuevas formas de articulación con el propósito de mantener vigentes los contactos e intercambio ante la prohibición y extinción de los viajes tradicionales en los lomos de burros, mulas y llamas. Esto demuestra la capacidad de dinamismo por parte de los atacamas/atacameños para mantener y modificar la movilidad e intercambio. Ante las imposiciones legales y económicas por parte de los Estados, los grupos atacamas/atacameños crean nuevos ciclos en que resurgen a través de nuevas formas de movilidad e intercambio.

Entre 1999 y 2001, el Consejo de Pueblos Atacameños del Salar de Atacama[3] en Chile y las comunidades de Quetena Grande y Quetena Chico en Bolivia organizaron otra serie de ferias de trueque en Hito Cajón justo en el límite de ambos países (Aguilar y Moreno, 2001:13).

En estas primeras ferias se solicitaba a los participantes la exclusividad de trueque (cambalache) sin que mediara otra forma de intercambio: (Aguilar y Moreno, 2001:13). El encuentro también sirvió para la reunión de familiares que estaban separados por la distancia y las fronteras:

> *"Se encontró una mamá con unos de sus hijos, se había venido a Chile y tenías 20 años que no se veían…"* (Atacameño N°1)

Pocos años después, dirigentes atacamas/ atacameños de Catua, La Poma, Los Andes (Argentina); Quetena Grande, Quetena Chico (Bolivia), y San Pedro de Atacama (Chile) fundaron organizaciones indígenas autónomas enfocadas principalmente a agendar y celebrar ferias de intercambio. Estas son Pueblos Atacameños sin Fronteras[4] y Red Pueblo Atacama. Estas agrupaciones son nuevas expresiones atacamas/atacameñas para mantener la conectividad, ya no solo se trata de comunidades tradicionales o las comunidades constituidas en base a las directrices del Estado, sino que son grupos de indígenas que de manera autónoma y reivindicativa se organizan con el objetivo de celebrar las ferias de trueque.

Si bien, toman de ejemplo el modelo estatal para estructurarse, pero sus representantes se consideran de un solo pueblo a pesar de estar separados en tres países distintos. No abandonan el sentido de comunidad tradicional que combinan con otras formas de organización para lograr sus objetivos. Sus actividades están encaminadas a mantener relaciones históricas, sociales, culturales y comerciales que los Estados no tienen presente en su concepción sobre lo indígena.

Las agrupaciones se encargan de convocar y organizar ferias en localidades atacameñas en el espacio de la triple frontera. Así pues, las actuales ferias son constituidas y agendadas principalmente desde organizaciones atacameñas.

Estas organizaciones en algunos casos han sobrepasado ciertos marcos pretendidos por el Estado, pero sin romper con la legalidad. Si bien, los Estados

[3] El Consejo de Pueblos Atacameños es una asociación indígena creada por el Estado chileno que agrupa a presidentes de comunidades atacameñas del Salar de Atacama cuyas funciones principales son las de servir de interlocutores en apoyo a los programas de desarrollo por parte del Estado y empresas privadas que se encuentran en la región de Antofagasta.

[4] Es notable que esta organización coincide con algunos elementos de las iniciativas aymaras de encuentros transfronterizos. Daniel Bello, comenta que la Alianza Aymara sin Fronteras nace en el 2001, y surge precisamente de las Ferias Aymaras de encuentro entre Bolivia, Chile y Perú. Estas ferias estaban constituidas desde hace varios años como una forma de encuentro entre aymaras ante las restricciones puestas por los Estados. Ver: "Alianza Estratégica Aymaras Sin Fronteras: una respuesta territorial a los desafíos de la 'glocalización'", en *Tinkazos. Revista Boliviana de Ciencias Sociales* (La Paz), núm. 32 (diciembre de 2012), pp. 147-164.

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permiten la constitución de organizaciones indígenas, pero solo dentro de los límites nacionales. Sin embargo, las organizaciones actuales, uno de sus principales objetivos es lograr el reconocimiento por parte de los Estados de sus actividades y características transfronterizas y transnacionales que tiene el pueblo atacama/atacameño.

En los últimos años, las organizaciones atacamas/atacameñas han expresado su punto de vista a través de manifiestos como la Declaración de las Quetenas 2012[5] y elevado una serie de solicitudes a los gobiernos de sus respectivos países sobre sus derechos como pueblos indígenas transfronterizos, algunos de estos derechos reconocidos en documentos internacionales como el Convenio 169 de la O.I.T. y la Declaración de la O.N.U sobre los Pueblos Indígenas de 2007. Hasta el momento no han hecho ninguna demanda formal contra los Estados, aunque desde la perspectiva de estas organizaciones no descartan la posibilidad de ir a tribunales a nivel internacional.

> *"1° Se ratifica la unidad del Pueblo Atacameño más allá de las fronteras."* (Declaración de las Quetenas).
>
> *"Estamos dispuestos a demandar a Argentina, Chile, Bolivia. Ellos no están haciendo cumplir con los las leyes… El* [Convenio] *169 dice que tenemos derechos de hacer nuestra forma tradicional de comercio y no lo están permitiendo… Es un derecho ancestral, si no lo permiten vamos a demandar en la O.I.T., ya hemos tenido varias reuniones con las demás comunidades y todos queremos …"* (Atacama N°2).

La dirigencia de estas organizaciones se ha ido especializando en un discurso que expresan en las ferias, se basa en la historia del trueque, arrieros, espacio, unidad y territorio que utilizan como elementos justificativos para viajar y realizar las ferias de intercambio. Desde su propio conocimiento han construido un repaso histórico de las relaciones de intercambio social y económico en un territorio entendido como uno solo.

Esto demuestra que los habitantes Puna-Salar de Atacama han desarrollado sus propias dinámicas integracionistas por siglos, la más reciente son las ferias creadas por las organizaciones atacamas/atacameñas. Así pues, este discurso sobre memoria, territorio y lazos familiares se ha fortalecido y ha cobrado protagonismo en las ferias, convirtiéndose en un importante elemento en la reconstrucción de identidad atacama/atacameña. En los discursos son muy mencionados el arriero, trueque, vínculos familiares y se practican rituales andinos asociados a la Pachamama. Todos son elementos que sirven para la construcción de una conciencia étnica atacama/atacameña, y las ferias ocupan un lugar central como espacio de excelencia atacameña en que se encuentra historia, prácticas económicas, pueblo y cultura.

En ese sentido, las comunidades y organizaciones a través de solicitudes, reclamos y la propia práctica de las ferias, cuestionan la centralidad de sus respectivos Estados. Piden cambios en las formas administrativas (barreras arancelarias, migratorias o fitosanitarias) y reconocimiento transfronterizo. Esto es algo que los Estados han prestado muy poca atención a pesar de tener una fuerte retórica de reconocimiento y respeto a las tradiciones y culturas de los pueblos indígenas.

2. Los feriantes y ferias

Los feriantes son una unidad intergrupal de orígenes indígenas, campesinos y pastoriles que tienen un tronco común. Se consideran un solo pueblo-nación Atacama, pero a la vez representan el encuentro de por lo menos tres ciudadanías distintas dentro del espacio que rodea a la Puna-Salar de Atacama, cuyas relaciones sociales se definen a partir de la organización y celebración de ferias de intercambio.

Los feriantes se interrelacionan a través de prácticas económicas que van desde el trueque, don, compra-venta y/o la fusión entre estas formas de intercambio. También realizan prácticas culturales, especialmente andinas y mantienen redes de amistad y familia.

Su escenario de encuentro principal son las ferias que realizan en diferentes pueblos y localidades entre la Puna-Salar de Atacama. Estas localidades estuvieron ligadas a relaciones de intercambio del pasado arriero y llamero como puestos de abastecimiento, recarga o descanso.

Los feriantes, en su mayoría son gente que vivieron o aún viven en la Puna de Argentina, Bolivia y Chile, otra parte son del Salar de Atacama, Chile. En algunos casos se trata de personas mayores que fueron los últimos actores del arrieraje a tracción animal. Muchos de los feriantes de origen puneño tienen antepasados que fueron arrieros y llameros quienes cruzaron el territorio en viajes de comercio que en otra época estaban acostumbrados pasar límites internacionales sin mayores restricciones.

En la actualidad muchos feriantes tienen en común lazos de parentesco -especialmente entre los puneños-, pero sus ciudadanías varían entre argentina, boliviana y chilena. La mayoría de los feriantes se identifican como atacamas o atacameños, otros se consideran entre quechuas, chichas, collas y finalmente un grupo no se considera indígena.

Los grupos de feriantes participan en estas ferias con el propósito de comerciar, pero también de reforzar su condición indígena y a la vez presentarse como un solo pueblo ante los Estados y ante ellos mismos, aunque es innegable que existen divisiones internas que surgen en circunstancias espaciales y van

[5] Declaración de Quetena, marzo de 2012. Encontrada en la edición mensual de abril del periódico *Lickan-Ckoi,* San Pedro de Atacama.

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desde la diferenciación entre ciudadanías hasta la localidad de origen entre gente de la Puna y del Salar.

El inicio de la programación de las ferias generalmente es en el mes de septiembre en el Pueblo de Jama (Argentina) es un punto muy cercano a la frontera argentino-chilena. Se realiza una reunión en que son convocados comunidades y organizaciones atacamas/atacameñas de Argentina, Bolivia y Chile, allí se decide lo que se denomina el Ciclo de Ferias. Son alrededor de casi una treintena de ferias que inician en octubre y terminan en mayo, sus sedes son diferentes localidades y pueblos en el territorio atacameño dentro de la triple frontera.

Estas organizaciones hacen coincidir el ciclo de ferias con el antiguo calendario agro-pastoril de los llameros y arrieros. Precisamente entre septiembre a mayo son los meses de siembra-cosecha, cuando el ganado estaba engordado y muy especialmente es el tiempo en que el frío terminó y se puede viajar por la cordillera andina.

Los lugares más comunes para ferias son Hito Cajón (frontera Bolivia-Chile); San Pedro de Atacama (Chile); Quetena Grande (Bolivia); Catua, Susques, Coranzulí, El Toro y San Antonio de los Cobres (Argentina). La mayoría de estos lugares revisten de una íntima relación con el intercambio, ya que fueron paradas de los arrieros y llameros. Los feriantes han reactivado o creado en los últimos 20 años redes de nuevos circuitos de intercambio.

Estos lugares se vuelven espacios de culto y memoria en que se resalta el pasado arriero y el trueque. Las ceremonias andinas cobran protagonismo, ninguna feria por lo menos oficialmente inicia sin un *"Pago a la Pachamama"*. Social y comercialmente estas localidades y pueblos momentáneamente se convierten en centro económicos, culturales y memoria.

Las ferias parecen tener rasgos comunes. En cuanto a su desplazamiento las ferias son en la mayoría de los casos grandes mercados rectangulares al aire libre, casi siempre en la plaza central de los pueblos, o bien en al interior del gimnasio principal de la localidad. (Ver imagen N°1)

El eje articulador de todas las ferias son los feriantes de San Pedro de Atacama, ya sea su posición geográfica le permite conectarse por carreteras y caminos con casi todos los pueblos puneños fuera de Chile; o bien por las mercancías industriales a las que tienen facilidad de adquirir y que son demandan en los lugares menos accesibles en la Puna.

Los feriantes chilenos participan en las ferias tanto en Argentina y Bolivia. Están en Hito Cajón, San Antonio de los Cobres, incluso localidades de difícil acceso como El Toro, Coranzulí o Quetena Grande. Sin su participación los encuentros no estarían tan nutridos de personas y mercancías. Es poco común encontrar feriantes de Argentina en Bolivia o viceversa. Las rutas pueden ser demasiado largas, llegar a una feria en Argentina o Bolivia, involucra pasar primero por los puestos fronterizos de Chile, lo que representa una barrera extra y una de las más difíciles. Una de las pocas ferias en que se pueden encontrar los feriantes de los tres países es la feria de San Pedro de Atacama, que se realiza en noviembre por motivo de aniversario de la comuna.

Las ferias por lo general se celebran junto con otra festividad del pueblo para convocar mayor cantidad de personas. Estas festividades en muchas ocasiones son en homenaje al santo patrón del pueblo. De esa manera la feria también se convierte en fiesta popular.

Los pueblos que son escenarios de ferias, se convierten en comunidades anfitrionas, tienen cierta obligación de dar alojamiento y alimentación a los feriantes de los otros pueblos, lo que conlleva altos niveles de organización para recibir delegaciones entre diez y más de cien personas, sus vehículos y mercancías. Para comunidades pequeñas es todo un desafío, sus localidades se ven sobrepasadas y tienen que hacer grandes esfuerzos logísticos para llevar estas ferias a cabo. Algunos feriantes, especialmente puneños, aprovechan para visitar y quedarse en casa de familiares o amigos.

En cambio, otras ferias cerca de los límites nacionales como Hito Cajón o Pueblo de Jama, se inician y finalizan en un par de horas. Los feriantes llegan con sus mercancías, intercambian y regresan. En los últimos años los puestos fronterizos se han reforzado y especializado. En otros tiempos, no había puestos fronterizos lo que significaba la no realización de trámites. En la actualidad es obligatoria completar la burocracia migratoria-aduanera-sanitaria.

Una de las ferias más importantes es la de San Antonio de los Cobres, sitio que mantiene su trayectoria como punto de encuentro. Es organizada por la Red Pueblo Atacama, no solo convoca los feriantes de San Pedro de Atacama, sino que también a un número plural de comunidades puneñas de Jujuy, Salta, Catamarca e incluso otros pueblos indígenas. Es una de las más numerosas en cantidad de personas, mercancías y participación de instituciones del Estado y ONG's que apoyan.

Los feriantes visitantes terminan *"sin nada"* (como ellos mismos expresan) todas sus mercancías son cambiadas o vendidas, es más quedan una serie de pendientes a través de encargos específicos para la siguiente feria. El dinero obtenido lo utilizan para comprar en los negocios de San Antonio de los Cobres. Los feriantes de San Pedro de Atacama, regresan abastecidos principalmente de comestibles. Algunos feriantes revenden en Chile parte de lo obtenido y estas mercancías continúan viajando. Además, esta feria al igual que la de Susques, tiene la característica de articular pisos ecológicos y es una oportunidad que

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aprovechan los valles jujuyeños de intercambiar (trocar o vender) con la producción de la Puna.

Las ferias también son el momento de diferentes tipos de diversión organizados por la comunidad que recibe. Se hacen actos culturales en que se presentan muestras de bailes tradicionales. En las ferias de la Puna, es común el canto de coplas y tonadas o, por ejemplo, en una de las ferias en Susques se mostró cómo eran las diferentes amarras de mercancías en mula.

También la feria es momento de encuentro. Es la oportunidad en que las organizaciones/comunidades aprovechan para realizar reuniones de carácter político en que buscan estrategias para mayor apertura de las fronteras.

Si bien estas formas de ferias pueden ser relativamente nuevas, su contenido es precisamente mantener el carácter transfronterizo histórico y sentido de unidad del pueblo atacama/atacameño, y la feria es una de las mejores alternativas para lograr estos propósitos.

3. Formas de intercambio (trueque y compra-venta)

En el contexto de las ferias se utilizan diferentes medidas, pesos, instrumentos y formas de intercambio. Se usa el kilo, libra, metros, arroba y no se han abandonado formas tradicionales de medición como el palmo, plato, puñado, llenada y pieza, los cuales son útiles tanto en el trueque o compra-venta.

"La [hoja de] *coca se cambia y o se vende en libras, la harina en kilos, la soga en palmo, la carne de llamo la puedes compra en pieza o kilo…usas una romana pa' pesar…antes se vendían unos bloques así de sal, eso le decíamos 'panes'…"* (Atacameña N°2).

El trueque, también llamado cambalache todavía se da en las ferias. Este es un tipo de intercambio que busca equivalencia entre mercancías o productos diferentes. Generalmente estos intercambios son inmediatos, pero algunas veces son diferidos en el tiempo.

Los cambiantes, consideran que los bienes son más o menos equiparables, aunque es importante aclarar que muchas veces intercambian sin tener en cuenta una equivalencia exacta. En estos casos buscan obtener un producto o mercancía específico que le es difícil conseguir y están dispuestos a dar más por menos, o bien, el objetivo del trueque puede ser otro, que es el de estrechar relaciones. Aquí entonces ocurre un tipo de trueque en que se involucran otros elementos, en que la mercancía o producto es un medio más que un fin en sí mismo.

"*Una vez vi un niño, cambiar un paquete de golosinas que no costaban ni mil pesos* [chilenos], *pero los compró, seguro le costó conseguir esa plata para cambiarlo por una polera que podía costar como 15 lucas* [equivales a 15000 mil pesos chilenos] *y la señora se la dio, bien buena gente…quería ayudar al niño, eso es reciprocidad, de eso se trata el intercambio…"* (Atacama N°2).

El trueque -más que la compra-venta- es utilizado para crear y fortalecer alianzas, ya sea familiares o amistades, incluso políticas. Es decir, su función no es solo económica, también social en que se intercambian bienes simbólicos sociales como la amistad, confianza, respeto, honestidad y colaboración, lo cual fortalece vínculos sociales inter-atacameños.

El trueque es considerado como la forma de intercambio tradicional, en muchos casos se regía por una serie de tasas específicas como, por ejemplo: *"saco por saco"*, pero estas tasas están dando paso a las negociaciones realizadas por los propios feriantes, y utilizan precios equitativos como referencia para intercambiar; es decir, trocan algo más o menos del mismo precio del bien que ofrecen por el bien que quieren.

En la actualidad se pueden trocar todo tipos de productos y mercancías, cuyo origen son diversos lugares e industrias. Desde juguetes y ropa fabricada en Asia, artesanías locales, herramientas que alguna vez sirvieron en la minería en Chile, piezas de autos, computadoras, hasta alimentos y bebidas industrializados como harina, arroz, fideos, cervezas, sidras y bicervecinas de Argentina y Bolivia. Prácticamente el comercio de la feria es completamente abierto e ilimitado, pero no ilegal.

"¡Quiero mi [Televisor] *plasma! - ¿Usted no tiene plasma?, traje mis tejidos pa' cambiarlo por un plasma. Vine a Chile porque quiero un plasma…* (Atacama N°3)

Las tasas tradicionales han sido sobrepasadas, *"todo se puede cambalachar",* los feriantes crean sus propias reglas y rápidamente quedan atrás las reglas del siglo XIX y XX. Y es que la afluencia de nuevos productos y mercancías de diferentes tipos de marcas, calidad o tiempo de uso han abarrotado a las ferias y aún no se han podido establecer nuevos patrones y por el momento no parece interesarles a los feriantes.

La reciprocidad del trueque es un acuerdo entre feriantes y ya no obedece a reglas del pasado, una vez hecho el trueque se desvanece ese acuerdo. Así pues, no quedan tasas fijas entre feriantes.

"Cuántas veces no cambié soga yo cuando era joven…ya no me la quieren cambia' como era antes… quieren que les dé ma'…" (Atacameño N°3).

A pesar de los cambios, el trueque tiene importancia y validez, su imaginario crea relaciones sociales entre los habitantes de los diferentes pueblos de la región.

Originalmente el trueque estuvo ligado a la producción de diferentes zonas ecológicas complementadas; sin embargo, la decadencia en la producción, restricciones fronterizas, el uso del dinero, otras redes de comercio ampliado y la variedad de productos y mercancías han hecho que el trueque disminuya o tome otras formas.

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En la actualidad los bienes que se trocan, no son solo del lugar de origen de la persona o grupo. El bien generalmente sobrepasa esos límites, es posible que haya hecho diversos circuitos, paradas, tocado por muchas manos, descrito en múltiples idiomas e involucrado varios agentes; por lo tanto, el trueque actual y la feria va más allá de un intercambio de zonas ecológicas adyacentes y es en algunos aspectos es la representación micro de lo que ocurre en mercados internacionales.

El trueque en la actualidad más que práctica económica ha tomado un papel como imaginario y como símbolo. A pesar que las transacciones con dinero tienen mayor relevancia y que los intercambios de productos agrícolas-pastoriles prácticamente están desapareciendo, pero uno de los nombres que les dan a las ferias son: "Feria Tradicional del Trueque". Para las organizaciones atacamas/atacameñas, el trueque reviste de un pasado prístino, más equitativo y a la vez se representan como herederos directos de ese pasado y de prácticas indígenas:

"Nosotros hacemos lo mismo que nuestros antepasados, ellos cambiaban una cosa por otra, porque así era antes… Nosotros somos como ellos y vamos a mantener las tradiciones…" (Atacameña N°4).

El trueque tiene un valor simbólico renovado, es actualizado como parte de la memoria social para fortalecer dinámicas del presente, pero sin dejar mirar el pasado.

Por ahora el trueque no es una forma económica que se enfrenta a otras formas de intercambio, es más se combina y convive con ellas en la feria, que por cierto es prácticamente el único escenario donde resurge el trueque en la cotidianidad atacama/atacameño. La importancia de la práctica del trueque es que no quedó confinada en el pasado, los feriantes la han reajustado a los tiempos presentes a través de las nuevas mercancías que trocan en esecenarios creados por ellos mismos. (Ver imagen N°2)

Si bien las mercancías se siguen considerando para el trueque, cada vez gana más importancia la compra-venta. La referencia fundamental ya sea para la compra-venta e incluso el trueque es el precio. Casi todas las mercancías y productos tienen un precio o su posibilidad de cambio se basa en otro objeto de precio igual o similar.

Muchas mercancías son industrializadas, fueron adquiridas a través de compras y en las ferias también se les asigna un precio. En las actuales ferias de intercambio, la compra-venta representa muchas de las transacciones.

"A mí no me gustan las ferias, antes uno iba en burro, cambalachaba, ahora llegan en camionetas y es puro vender" (Atacameño N°5)

En la actualidad, el precio de los bienes de la feria va ligado de los precios del mercado, se toma en cuenta factores como mercancía nueva, usada o que sea una marca reconocida. El uso del dinero también va relacionado a cubrir los gastos de inversión. Muchas personas utilizan vehículos propios para ir a las ferias, hacen cálculos sobre tiempo invertido, gasto de combustibles, en ocasiones pago de impuestos y todo esto es reflejado en el precio de las mercancías y productos, para ellos es importante obtener algún tipo de *"ganancia"*. Y es que en general la economía de la Puna-Salar de Atacama ya está inserta en la circulación monetaria desde hace mucho.

Para los que van a la feria cada vez se hace más importante adquirir dinero local. La forma de obtenerlo es vendiendo sus productos y mercancías. Después finalizada la feria van a los almacenes locales para comprar mercancías que necesitan, de esa forma le *"sacan algo al viaje"*. Los feriantes provenientes de Argentina y Bolivia cuando visitan Chile, tratan de vender la mayor cantidad de artesanías, tejidos y productos comestibles, para luego con el dinero, van a los nuevos *malls* en la ciudad minera de Calama para adquirir mercancías y artículos nuevos. En algunos casos, pequeños comerciantes de la Puna van hasta Calama, compran refacciones automotrices, medicamentos, video juegos y aparatos tecnológicos que después revenden en los comercios de sus pueblos.

Por último, a las ferias asisten personas que no llevan mercancías, algunos son turistas, otros son habitantes de los pueblos que solo les interesa comprar, en otros casos hasta funcionarios de oficinas gubernamentales que aprovechan las ferias para obtener mercancías y ropa de marca de segunda mano que no pueden conseguir cercas de sus puestos o localidades donde están asignados.

4. Globalización a la atacama/atacameña

La globalización actual se caracteriza por el dominio del sistema capitalista neoliberal supranacional como forma de integración y control de la economía y modelo civilizatorio. Si bien la palabra globalización pareciera abarcadora o que incluye pueblos y culturas, pero muchas veces en la práctica significa exclusión. Muchos segmentos de la sociedad han quedado fuera de este sistema, pero han creado sus propias redes sociales. En este sentido ante la aniquilación de la red de arrieros y remeseros, los atacamas/atacameños se han reorganizado para mantener sus relaciones socio-económicas. Toman como punto de referencia su historia de intercambio para formar nuevas redes de conexión. Se trata de grupos que tienen como interés facilitar relaciones sociales, culturales y economías.

Las ferias son otro camino de la globalización comercial-cultural y de información. Escenarios como Hito Cajón, Catua, Toconao -entre otros en la triple frontera- son lugares que precisamente no son considerados fundamentales para el comercio de la globalización o bien revisten de una importancia mínima

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en sus respectivos países; sin embargo, tienen una larga historia de conexiones y en la actualidad son parte de un sistema amplio en que los atacamas/atacameños se encuentran y que alguna medida contrarrestan hegemonías sobre las formas de exclusión, adquisición y rehacen sus propias formas consumo de mercancías del capitalismo y comercio mundial.

Las ferias atacamas/atacameñas son una especie de mercados locales, temporales que se construye por viajes, flujos y cambios en la economía y consumo creado por los propios actores fuera de las planificaciones de distribución y consumo. Pero es parte de un fenómeno económico global. La feria forma parte de una red mundial que el propio neoliberalismo no tenía en cuenta.

Es por eso que, desde el punto de vista de la economía hegemónica, estos mercados no tienen cierta validez, aunque en el caso de las ferias no son del todo ilegales, ya que no hay una ley expresa que la prohíba o que castigue la actividad. Para los atacamas/ atacameños estas ferias son legítimas ya que es la continuación de una práctica que viene desarrollándose desde hace siglos en un territorio que siguen interpretándolo como artículado y consideran que tienen derecho como pueblo indígena.

Pero para las administraciones estatales, las actuales ferias se encuentran en un área límite entre lo legal-ilegal, legítimo-ilegítimo. Es una especie de anomalía dentro del sistema, algo que no debería suceder bajo los estándares hegemónicos, pero sucede. Los indígenas -creados bajo los parámetros del Estado- deberían expresarse solo por una vía cultural dentro de los límites nacionales y consumir exclusivamente mercancías obtenidas en los grandes emporios comerciales; sin embargo, los atacamas/ atacameños crean sus propias redes de comercio para consumir mercancía globalizada.

Los sectores indígenas periféricos se administran así mismos a través flujos de mercancías, nuevas, usadas, originales, copias o incluso desechadas que han cruzado varios circuitos comerciales internacionales y que son parte de la producción-comercio mundial.

Esta otra globalización, se basa en redes que cruzan los límites nacionales por distintos canales, pero en su práctica no se opone a la globalización principal, incluso se complementan, tienen interrelaciones y coexisten en lo que A. Tarrius (2007), denominó territorios circulatorios, ya que no hay una sola dirección, sino que es un ir venir, un flujo constantes espacios estrechamente vinculados.

La feria es una alternativa para adquisición de este tipo de mercancías que para algunas comunidades se les dificulta obtener por medio de los mercados hegemónicos como los nuevos *malls*. La información e invitación al sobreconsumo (lo que podemos llamar publicidad), llega a puntos a donde no llega la mercancía. La feria entonces cubre esa ausencia, se convierte en la alternativa para adquirir las marcas y mercancías deseadas. La feria es la democratización y el acceso a las mercancías a sectores que no entran en el discurso globalizador, además internacionaliza o exporta productos que fueron parte del mercado nacional.

> *"De Chile, nos llegan los celulares, la ropa, compramos zapatillas marca Nike… o Adidas… nos gusta la ropa deportiva también…"* (Atacama N°3).

Las ferias se convierten en un sistema económico que en alguna medida son parte del mundo económico global. Hacen fluir mercancías y dinero más allá de los límites nacionales, pero a la vez son un mundo que no está separada de la globalización; sino que es producto y eslabón de muchas otras unidades políticas, culturales, legalidades, legitimidades y se convierte en una especie zona integrada al sistema y no separado del mismo. El flujo adopta características muy parecidas al capitalismo y sus tácticas, incluso más flexibles, esto para no competir con el comercio principal de forma directa y se convierte en otro camino del mercado principal.

Precisamente la feria es una articulación de otros mercados, economías conectadas por atacamas/ atacameños que actúan como agentes de una forma de globalización popular e indígena. Esta otra globalización funciona en combinación con otros mercados hegemónicos y no hegemónicos, se crean interconexiones de larga distancias en que se enlazan personas, monedas, información y mercancía.

> *"Por el guasá* [WhatsApp] *mandamos las cosas que queremos, allá las compran y ustedes nos las traen, nos la venden y acá cambiamos"* (Atacama N°3)

> *"Lo que conseguimos aquí,* [Hito Cajón], *lo vendemos en Uyuni…"* (Poblador de Quetena Grande)

Las ferias son parte de la globalización, pero de una manera muy particular. Las organizaciones atacamas/atacameños no buscan imponer otra forma económica de producción-distribución-adquisición-consumo; sino que en alguna medida son parte de las actividades económicas capitalistas neoliberales. Son un canal hacia la movilidad de mercancías globales a lugares considerados periféricos. En ese sentido la feria es necesaria como un eslabón de las mercancías de la globalización.

La feria como parte de la otra globalización es un mercado popular con elementos andinos, pero con lógicas del capitalismo neoliberal. En ese momento, lugares que para los Estados pueden ser secundarios, como Quetena Grande (Bolivia); Coranzulí (Argentina); Toconao (Chile) adquieren cierta centralidad y que justamente con el sustento histórico que le dan las organizaciones atacamas/atacameñas abre la posibilidad que ciertos productos continúan un viaje

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hacia mercados internos, incluso mercados más grandes. En ese sentido se resalta la geografía y les da relevancia a estos lugares ya no solo por su pasado, sino que también por su presente feriante.

La otra globalización a la atacameña posee cierta relevancia, ya que es una de las maneras en que actores populares crean sus propios flujos globales de mercancías y surgen nuevas oportunidades de adquisición, consumo y relaciones sociales.

Se trata de redes transnacionales de procesos globalizadores desde abajo, desde lo periférico e indígena que es una respuesta a otros procesos globalizadores hegemónicos en el que no son incluidos. Pero los atacamas/atacameños no están aislados del mundo, por el contrario, desde hace mucho sus antepasados formaron parte de redes de comercio colonial-mundial y en la actualidad están sumamente involucrados a sus respectivas sociedades nacionales. Las carreteras y un sinnúmero de camiones que unen el comercio Mercosur pasan prácticamente al frente de las casas de los atacamas/atacameños, como ocurre en San Pedro de Atacama (Chile) y Susques (Argentina). Entonces no están ajenos a lo que ocurre en la distribución de mercancías.

Estos pueblos, forman parte de eslabones de tránsito y al mismo tiempo son receptores de políticas neoliberales supranacionales, como lo son los tratados de libre comercio. Las organizaciones transfronterizas actuales de atacamas/atacameños se desenvuelven en alguna medida en base a tales esquemas, pero también tienen cierta capacidad de amoldar ciertos elementos de esas agendas para lograr representación atacama/atacameña que en algunas ocasiones son distintas a la propuesta desde los gobiernos. Por ejemplo, la fluidez para moverse en espacios fronterizos y re-crear formas de comercio e identidad.

Es otra cara de la globalización, opera en sus márgenes, precisamente en territorios fronterizos. Sus actores son miembros de las organizaciones atacamas/atacameñas que brindan alternativas de distribución-consumo, y son una opción especialmente en lugares donde las últimas crisis económicas e inflaciones han afectado significativamente.

En ese sentido, San Pedro de Atacama, se ha convertido en el receptor de mercancías de la globalización, las cuales, una vez compradas o usadas, van a las ferias para ser distribuidas en la Puna de Argentina y Bolivia. Así pues, San Pedro de Atacama es lugar clave como articulador de mercancías y ferias. Este pueblo es el que se conecta con todos los demás pueblos y localidades a través de la distribución de mercancías de la globalización a lugares apartados y periféricos.

Eso convierte a San Pedro de Atacama en el centro de reexportación y distribución de la globalización a la atacama/atacameña. Es la globalización que no se tenía planeada desde los grandes centros de la economía mundial y nacional, pero es reproducida desde territorios considerados recónditos, organizada por grupos de distribuidores y consumidores que no estaban estimados en las macro redes del comercio mundial, ellos son los feriantes atacamas/atacameños.

Desde estos márgenes las ferias ponen en cuestionamiento la idea de libre mercado. El consumo del mercado global está pensado principalmente en las urbes, específicamente en los malls, pero las ferias son el punto en que también se pueden adquirir estas mercancías, pero los feriantes se enfrentan a un sinnúmero de obstáculos que impide el libre paso de ellos, sus productos y mercancías. Así pues, el libre mercado no es tan libre, es restringido en que los atacamas/atacameños no se oponen a la adquisición de estos productos y cumplir con exigencias legales, pero en sus prácticas plantean otras formas de adquirirlos y distribuirlos. Precisamente estas otras formas son condenadas y estigmatizadas en un sistema abarcador que excluye otras formas de comercio y definición del territorio.

5. Estigmatización de los feriantes y las ferias

A pesar de los tratados limítrofes que dividieron el territorio atacameño (1899-1904), la vida en la Puna-Salar de Atacama no quedó del todo desvinculada. Por varios años continuaron los viajes de intercambio entre los atacamas/atacameños y cruzaban las líneas fronterizas sin mayores limitaciones

Pero esta imagen de frontera abierta ha ido cambiando con el tiempo, los que cruzaron las líneas limítrofes hace más de 40 años atrás recuerdan viajes sin novedades, sin puestos fronterizos, o a los más, sencillos trámites migratorios dentro de localidades como Susques o San Pedro de Atacama a cientos de kilómetros al interior de los países.

> *"antes la frontera quedaba en Susques. En Jama, eso era peladero, después subieron a Jama…Uno llenaba unos papeles y listo seguía el viaje. Después en Jama, pusieron ese edificio que hay ahora, como 2010, 2012, no me acuerdo…ahora ta más jodio' cruzar…"* (Atacameño N°6).

Con el tiempo las medidas de segregación estatales en los límites se hicieron cada vez más notorias. Las dictaduras militares y posibilidades de guerra como ocurrió en 1978 entre Argentina y Chile, incrementaron la separación. Pero por irónico que parezca es que con las políticas de la globalización neoliberal de los últimos años -la cual tiene como retórica la unidad de mercados- fue cuando las personas entre Puna-Salar de Atacama se sintieron aún más separados.

A partir de la década de los 90 del siglo pasado, surgieron nuevas carreteras internacionales que, en vez de unir a los pueblos, alargaron las distancias. Esto se debe principalmente a que en los límites internacionales poco a poco brotaron puestos estatales de control. Las fronteras dejaron de ser

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puntos de encuentros y se modernizaron hacia puntos de regulación. Los puneños empezaron a percibir que al cruzar esos límites estaban en otro país.

"En Catua, están todos mis primos, tíos, era como estar en su casa… un tiempo queríamos ir, pero ya no se podía, nos pedían hasta pasaporte… ¡¿pasaporte?! ¡Si voy a la casa de mi primo, mi familia! Los gendarmes, nos iban a meter presos, pero nos hicieron dar la vuelta." (Atacameño N°5).

Las fronteras entre Argentina, Bolivia y Chile, se han reforzado en los últimos años. Se han creado complejos fronterizos y ha aumentado el número de agentes en los límites, incluso militares en ciertas ocasiones. Una de las consecuencias directas fue la desaparición del arrieraje transfronterizo y que las actuales ferias sean estigmatizadas, relacionándolas al contrabando ilegal.

La frontera que antes era vista como un lugar de articulación, ahora es sentida como un espacio ajeno que puede representar impedimentos a la movilidad. La idea se refuerza con la serie de restricciones, papeleo, revisiones e incluso en algunos casos maltrato sicológico y discriminativos por parte de algunos funcionarios estales:

"La última vez que fuimos a la feria en Susque, uste' viera, todo bien en migración, pero los del SAG de ellos[6]*no nos dejaron pasa'… nos hicieron desifencta' las cosa… descarga' to eso… había señoras ancianas con sus paquetes y les rociaron un insecticida, yo creo que era agua al final… nos hicieron baja' to', saca' tooo… y después volvé a subi' to' y más encima teníamos que paga' la rocia'… Sí, fue humillante, muy humillante… después cuando volvíamos, los chilenos igual, que no podíamos pasa' ¿cómo no vamos a pasa'? siempre hemos pasao'… ¿qué le pasa?, nosotros sabemos que podemos pasa', y que no…Ahí ya yo me molesté y les grité. Me dijeron que me iban a mete' preso, ¡yaaa me daba igual! Ellos tienen que respetar, tenemos que hacer valer el Convenio 169…"* (Atacameño N°7).

"Acá nos tienen retenidos más de 6 horas ¿por qué? No nos han dicho… Todos los papeles lo hemos manda'o, tan las cartas ¿qué más quieren? Hay niños, señoras, ancianos… uno no es narcotraficante, pero nos tratan como delincuentes…" (Atacameño N°8)

"Te ven así de collita y revisan todo che, hasta el perro han tira'o una vez, uno es de acá, uno es de estos la'os, no es pa' que lo traten así a uno. Ellos no son de acá… Le ha han dicho a mi señora que viene con contrabando, no hay contrabando… (Atacama N°4).

"No pudimos pasar, dijeron que éramos muchos, entonces nos molestamos, pero ellos dijeron que si insistíamos a todos nos iban a llevar detenidos… no hubo caso, nos tuvimos que regresar… (atacama N°5)

"*Hay veces que tratan bien, hay veces que tratan mal, dependen del funcionario… unas veces uno pasa rápido, otras veces demoran… Aduana Chile, sí, sí revisa mucho… Yo sí creo que nos revisan más a los que somos indígenas, porque a veces hemos venido a San Pedro* [de Atacama] *a visitar y nada, ahí uno pasa noma'… después el mismo auto, la misma gente, decimos que venimos a la feria y na' má' falta que desarmen el coche…Argentina es lo mismo…todos ellos son los mismo…* (Atacama N°6).

La expectativa de obtener mercancías y productos, además de mantener vínculos inter-atacameños, se ve truncada por la forma y fondo de las políticas fronterizas. Así la movilidad que es una característica fundamental de estas comunidades viajeras en alguna medida queda restringida o eliminada. Desde la perspectiva atacama/atacameña se puede comprender que estas políticas atentan contra las formas culturales de grupos que históricamente han estado viajando y comerciando. Estos grupos están dispuestos hacer cambios y adaptar sus relaciones socio-económicas a ciertas formas del comercio globalizado y reglas estatales. Lo que por el momento no están dispuestos aceptar es la eliminación o restricción de los viajes de comercio como una práctica cultural, aunque no sea importante para su economía doméstica, pero si una rasgo cultural fundamental de su identidad que ha sido re constituida y re adaptada a través del tiempo.

Poco a poco los grupos de la Puna-Salar, asimilaron los cambios y transformaciones, pero no han dejado de viajar y comerciar, incluso crearon su propia institución comercial indígena que es la feria, la cual ha desarrollado sus propias características culturales y económicas. Pero a pesar del discurso de unidad territorial atacama/atacameña, ahora casi que no hay duda que al cruzar el límite, se está en otro país. Las banderas, las leyes, los productos, incluso los mismos acentos revelan que se está en otro territorio. El límite y las fronteras son vistos como barreras para la continuidad histórica-comercial-familiar que ha ligado a esta zona por siglos.

Al hablar de feria inminentemente hablamos de cruce de límites fronterizos tanto de personas como de mercancías. Las ferias no pueden ser concebidas sin el cruce de fronteras. Esto lleva a cierta percepción de los grupos feriantes sobre los límites estatales. Los centros administrativos puestos en estos límites son la representación física de relaciones de poder y se encargan de la clasificación de objetos y personas. Y precisamente estas clasificaciones cobran mayor grado de segregación en países que han tenido un largo pasado conflictivo en sus relaciones limítrofes y en la colonización-modernización de zonas indígenas adyacentes.

Para los Estados, el antiguo comercio indígena-campesino transcordillerano ha sido eliminado principalmente gracias a los puestos fronterizos que son la primera representación física del poder del Estado. El discurso de la modernización, concibió al comercio indígena-campesino en términos de

[6] Se refiere al Servicio Nacional de Sanidad y Calidad Agroalimentaria de Argentina (SENASA).

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inviabilidad debido a sus prácticas premodernas o inadaptadas, sus localidades precarias y sus conocimientos rudimentarios que les impiden operar como actores racionales en contextos de mercados liberales y modernos. Si la feria es continuación de ese pasado, entonces las mismas -en alguna medida- también son objeto de persecución de las políticas estatales en las líneas divisorias.

Sim embargo, los actuales feriantes no intentan escapar de las regulaciones migratorias y aduaneras, pero estas instituciones son percibidas como un obstáculo a sus intereses de comerciar de forma más libre. La interacción entre funcionarios y feriantes en casi todas las ocasiones ha retardado o incluso ha impedido el cruce de los feriantes.

El constante filtro en los puestos fronterizos, hace que los feriantes vean a los Estados y a los funcionarios estatales como obstáculos para sus fines comerciales e incluso filiales y culturales.

A pesar que los feriantes no intentan utilizar pasos no habilitados para cruzar los límites en un territorio que conocen muy bien y están dispuestos a someterse a toda la burocracia aduanera-migratoria-sanitaria, pero aún así impera un criterio administrativo sobre las prácticas comerciales atacamas/atacameñas peyorativo considerándolo informal, incluso en algunos casos contrabando y los actores atacamas/atacameños son vistos como infractores. Sin embargo, es un comercio que involucra la participación de las agencias sanitarias, aduaneras y en no pocas ocasiones recibe el apoyo interno de gobiernos locales e instituciones gubernamentales. Además, no representa grandes volúmenes de mercancía, se trata de un comercio pequeño y eventual que más bien son un medio para reproducir y mantener lazos de relaciones sociales, históricas y culturales.

Los puestos fronterizos son el escenario del monopolio legal-moral-legítimo por parte del Estado y de los funcionarios, ya que no solo la ley es la que rige, también la voluntad del funcionario. Es una forma de manipulación de la legalidad al interior de las instituciones fronterizas. La estigmatización de grupos feriantes es una construcción entre la ley y la voluntad del funcionario. En un momento puede reprimir una mercancía legal, en otro puede dejarla pasar. Estas acciones convierten a la frontera en un obstáculo obligado que está bajo los criterios de quienes aplican las leyes.

Las organizaciones atacamas/atacameñas a pesar de la estigmatización de sus prácticas pretenden continuar celebrando ferias. Este es el momento de intercambiar mercancías, pero la feria significa la oportunidad de viaje y la reconstrucción de relaciones sociales, para lograr esto es necesario el cruce de fronteras, límites e incluso hacer valer sus derechos ante funcionarios que poco conocen sobre territorio, tradiciones andinas, normas que favorecen a pueblos indígenas e historia atacama/atacameña.

A pesar de los obstáculos, los feriantes continúan. Han demostrado que hay otras formas de ocupar las fronteras y formas de comercio combinadas; es decir construir su propia institucionalidad e integrar una nueva forma de Puna-Salar de Atacama que genera mecanismos nuevos de redistribución de productos y mercancías y reproducción de relaciones sociales.

Es probable que cierto nivel de repudio de las prácticas económicas por parte de los funcionarios, se debe a que solo se concibe una forma de comercio libre (el gran comercio neoliberal) y desconocen otras formas con raíces históricas.

Los feriantes son vistos como contrabandistas, infractores de la ley, aunque no lo son, estas calificaciones impiden un análisis objetivo de sus prácticas económicas tanto en su historia, alcance y significado.

Los feriantes son la continuidad de un quehacer indígena transfronterizo que se ha ido transformado en la construcción de la identidad atacama/atacameña. A pesar de las restricciones y prohibiciones los pueblos buscan las maneras de mantenerse vigentes y salir de los marcos en que otros los han definido.

II. Conclusiones

A pesar que las organizaciones atacamas/atacameñas sostienen un fuerte discurso en que se reivindican la figura del arriero/llamero y presentan a las ferias sustentadas en tradiciones muy antiguas, las mismas son el escenario para el intercambio de mercancías producidas por el capitalismo. Sin embargo, esto no se debe tomar como argumento para quitar la legitimidad que tiene este pueblo transfronterizo de encontrarse, crear y recrear sus propias redes sociales, culturales y comerciales. Se trata de ciclos en que resurgen a través de nuevas formas de movilidad e intercambios creados por los propios actores sociales atacamas/atacameños. Las ferias es un ejemplo vivo de como los pueblos indígenas hacen ajustes a sus contextos con el propósito precisamente de reforzar su identidad indígena.

Las ferias organizadas por las agrupaciones atacamas/atacameñas no son más que el propio pueblo-nación atacama/atacameño restructurándose y reorganizándose ante los cambios en el tiempo con el propósito de reivindicar su identidad y la unidad del pueblo-nación indígena que se niega a ser dividido y a desaparecer. Esto demuestra pues que los andinos no son grupos enclaustrados y estáticos en el tiempo y espacio como muchas veces son mostrados por el discurso de la modernidad nacionalista, el cual abarca desde imaginarios hasta literatura especializada. Todo

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lo contrario, lo andino no se encuentra aislado y desde hace mucho tiempo se conjuga con sociedades, mercancías e ideas de diversos puntos del planeta.

Pero el discurso de la modernidad nacionalista justifica la construcción del colonialismo interno, en que define a pueblos indígenas como grupo subalternos sin historia. Si bien en últimos años los Estados se han afanado en demostrar cierto reconocimiento cultural, pero en lo que respecta derechos sociales, históricos y económicos se ha avanzado poco, dejando un reconocimiento hacia los atacamas/atacameños sumamente incompleto. Ante esto, el reclamo principal de las organizaciones atacamas/atacameñas es que sus prácticas transfronterizas de muy larga data y la unidad de su pueblo dejen de ser juzgadas como amenazas al orden estatal.

En lo económico y legal la feria no constituye un proyecto subversivo anti-estatal, ni anti-capitalista, ya que obedece las leyes y es un espacio para la adquisición de mercancías globales a través de diversos mecanismos que incluye el uso del dinero. Pero propone otra forma de comercio pensado desde la tradición indígena. Esta forma de comercio y de hacer país no calza con la noción de estatalidad y las formas de imaginar y construir el país diseñado desde las élites en las capitales. Los Estados de Argentina, Bolivia y Chile planifican sus economías en el territorio atacama/ atacameño casi exclusivamente a partir de dos ejes económicos que responden al capital extranjero los cuales son minería y turismo, para los atacamas/ atacameños se pretende el mejor de los casos que se articulen a estos proyectos como apéndices. Estos Estados se han ocupado por la integración económica neoliberal desde arriba. Han firmado tratados mineros, de cooperación técnica, científica, comercio, turismo y energéticos como el Corredor Bioceánico entre otros, pero han olvidado la presencia, aporte e integración de las comunidades transfronterizas indígenas. Esta práctica se viene repitiendo desde hace más de un siglo cuando pactaron los tratados limítrofes internacionales de fines del siglo XIX.

Sin embargo, la experiencia de los comerciantes transfronterizos cuestiona los cimientos de planes asistencialistas conducida desde el Estado, a través de la promoción de políticas de lucha contra la pobreza, proyectos, paquetes y/o programas de bonos sociales. La economía feriante en alguna medida reivindica autonomía, territorio y libertad de economía, ya sea usando o combinando las formas del mercado capitalista con las formas del intercambio tradicional.

Las organizaciones atacamas/atacameños de manera exitosa han creado sus propias formas de mantener sus tradiciones vigentes e integración por diversos medios legales y legítimos, a la vez tratan de atraer el reconocimiento de los Estados, los cuales en ciertos aspectos no consideran el carácter transfronterizo del pueblo-nación Atacama. Los atacamas/atacameños plantean que tienen derechos ya sea por su tradición o bien por documentos de organismos internacionales-aprobados por los propios Estados- que respaldan las conectividad indígena y andina frente a la presencia filtradora del Estado que se ha reforzado en el territorio atacama/atacameño. Esto ha generado conflictos entre feriantes y funcionarios.

El proceso de las ferias ha revelado formas de apropiación de dinámicas locales, pero por sobre todo dinámicas cosmopolitas que reproducen formas de comercio y relaciones sociales. Lo actores locales se nutren de prácticas económicas vinculadas a la globalización que a pesar de invisibilizarlos se alimenta de ellos. Esto es la globalización a la atacameña.

El comercio de la feria es una estrategia de consumo y obtención de recursos que incluye mercados lejanos, ciudades y pueblos. La feria es el acceso y conexión a estos lugares, a sus mercancías y productos, incluso la posibilidad de pequeñas acumulaciones. En ese sentido la feria es una especie de escuela sobre la globalización y sus características.

Finalmente, el estudio de las ferias muestra sujetos sociales históricos, sus escenarios y sus nuevas formas de relacionarse en la era de la globalización. Las ferias siguen constituyendo un lugar central en el que se conjugan y entremezclan personas, identidades, nacionalidades, valores, símbolos, bienes, discursos, climas, historia y zonas ecológicas. Son el lugar y momento de conexión, intercambio y unidad al estilo atacama/atacameño.

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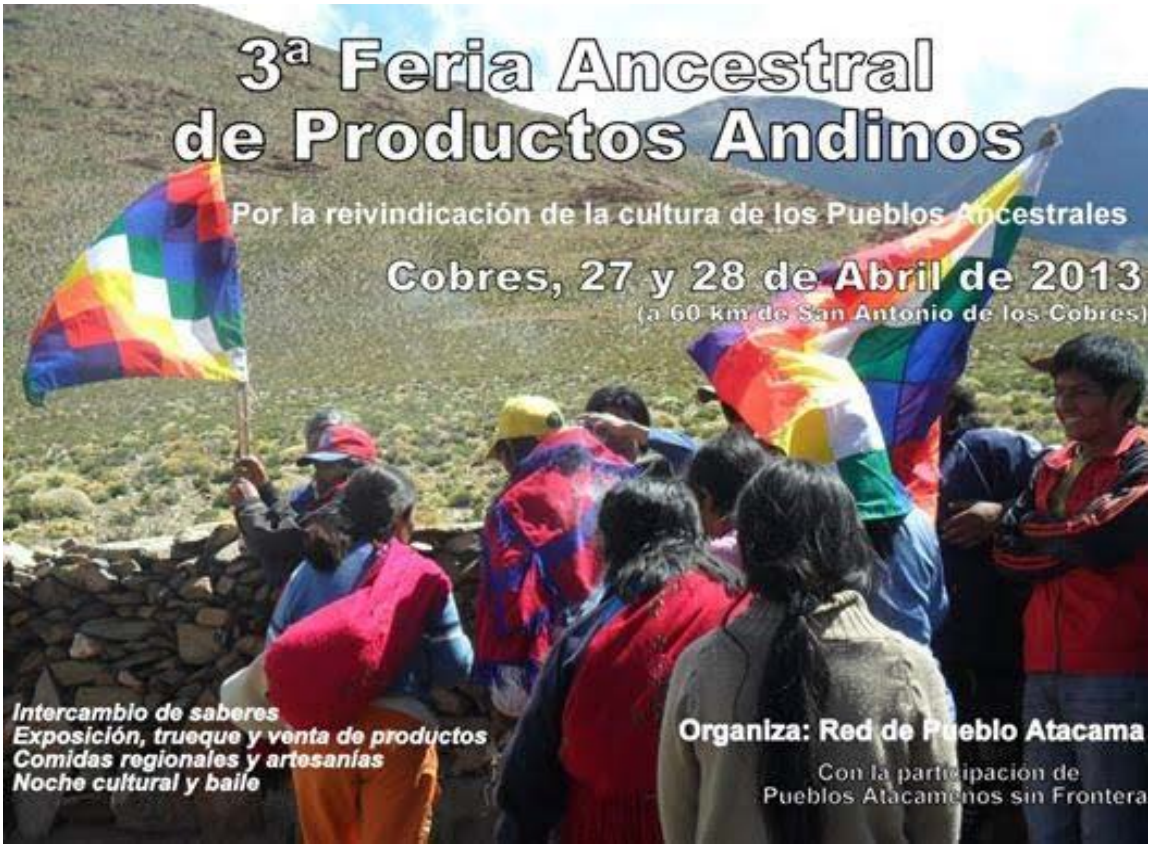
Anexos



Foto: Jorge D'Orcy.

Imagen N°1: Feria en la plaza principal de San Antonio de los Cobres, Provincia de Salta, Argentina en 2010,



Fuente: Red Atacama.

Imagen N°2: En el anuncio se hace énfasis en lo ancestral, pero también se promocionada lo ancestral, pero también la venta de productos junto con el trueque.

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Designing an Optimal Model to Implement and Increase the Profitability of EPC Projects

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Abstract- The purpose of this study is to identify the factors affecting on increasing of contractors 'profits of EPC projects and also to estimate the impact of each factor on the increase of contractors' profits. For this purpose, a questionnaire based on the components extracted from previous studies was prepared and sent to EPC project experts. At this stage, the factors affecting on profitability of EPC projects were identified according to the PMBOK standard. Then, the opinion of experts on the importance of each of the factors affecting on increasing EPC contractors' profits was obtained based on the Likert five-choice range and analyzed using SPSS software. The results show that the timely supply of equipment, avoiding of complex administrative bureaucracy, innovation and use of new technologies, adequate expertise and timely financing have the greatest impact on increasing the profits of EPC contractors, respectively.

Keywords: profit; EPC project; innovation; expertise; PMBOK.

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Keywords: profit; EPC project; innovation; expertise; PMBOK.

I. Introduction

In industrial projects such as the oil industry, power plants and infrastructure projects that are significantly affected by technological developments, the use of new management methods and structures is inevitable. Using the latest scientific achievements in this field, project managers should avoid using inefficient traditional methods so that they can use new methods to carry out their executive projects within a certain time and budget with the desired quality. Choosing the method of doing the project and choosing the most suitable contract is one of the important decisions of the project. Project implementation system refers to a set of processes in which the type of contract, payment method, the scope of responsibility of each party to the contract, how to resolve disputes between project stakeholders and how to distribute and allocate risk over a lifetime are explained. Due to the importance of choosing the right system, in recent years, several methods have been proposed to select the right system. Choosing the right project implementation method can reduce project costs by an average of 5% and project implementation time by up to 30%, and choosing the wrong system to advance projects can lead to problems such as delays, cost increases, disputes and claims in projects. This choice, which is made in the earliest stages of the project, affects all project implementation processes as well as the efficiency of the project implementation stages. The most common contract methods of project implementation are In-House system, construction management method, Design-Bid-Build system and Design-Build system. From the early twentieth century to the early 1950s, major projects were carried out by architects and engineers involved in the project and managed on their own initiative. In fact, it was in the post-1950s that systematic methods and tools for project management were developed and used (Young, 2005). Along with these changes, the methods of project implementation also changed, partly due to the complexity of projects in the years after World War and the specialization of areas such as design and execution, and part of this was due to the employer's need to exercise more precise controls over the performance of the actors involved in the project. The year 1950 marks the beginning of a new era of project management (Cleland, 2006). Gradually, issues such as cost and time management of the project received special attention, and systems such as the three-factor and four-factor methods for project implementation were formed. Given that the three main actions of the project are financing, design and construction; the five main methods of project implementation are as follows:

1. *In-House system:* Perform all three main actions within the employer organization.
2. *Design-Build system:* Financing by the employer and design and construction separately by external unit resources.
3. *Design-Bid-Build system:* financing by the employer and performing design and construction separately by external separate sources.
4. *Construction Management system:* financing by the employer, design and construction by separate external sources, coordination between design and construction by another external source.
5. *Build-Operate-Tran:* Provides all three main actions from a single external source.

One of the new methods in project implementation is Engineering, Procurement and Construction (EPC) method, which is also called turnkey method. In this type of contract, the contractor company undertakes and performs the engineering, procurement and supply of all equipment and construction of the project independently or with persons who are on the side of the company (William and Johnson, 2004). In Turnkey or EPC contracts, the contractor is responsible

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for the design, procurement and construction, and the other party to the contract (the employer) delivers a completed design according to what has been agreed (Huse, 2002). The contractor in the EPC project needs to be able to act in accordance with the parameters desired by the buyers of their services (Hartman, 2003). In general, it can be said that EPC contracts combine the three stages of engineering, procurement and construction in one contract. In this method of project implementation, despite the limitations for the employer, by transferring all project activities, including design, supply of equipment and activities related to construction, installation and commissioning to the contractor, the employer is relieved of responsibility in this regard. The implementation of industrial infrastructure projects in recent years in developing countries by the EPC method has expanded so much that today many ongoing activities are carried out using this method. Projects are often carried out by the project team as a means to achieve important organizational programs or services (Mahmood et al., 2014). Project management is the foundation of any construction project. Construction projects are multi-faceted and well-organized operations that consist of many tasks focused solely on the purpose of building and operating a project (Martens and Carvalho, 2017). Cost, time and scope have been the sides of the Project Management Triangle (PMT) for many years. These limitations have been linked to measuring project management success (Joslin and Müller, 2016; Larson, E.W., and Gray, 2015).

Hussin and Rahman (2009) showed that 14% of projects are completed for more than the contract amount, while more than 70% of all construction projects are delayed and 10% of the project consumables remain as waste. The construction industry is a project-specific industry, and it is difficult to evaluate the overall performance of construction projects due to the lack of standard method development. The nature of the project, effective project management tools, and the adoption of innovative management approaches are critical success factors (CSF) for construction projects (Akinade et al., 2017). Therefore, the CSF must be determined at the beginning of the project. By focusing on these factors, which are the main input of the project management system, the probability of project success increases. CSF explicitly affects the main objectives of the project including time, cost and scope (Gudien et al., 2014; Lin et al., 2011; Maghsoodi, and Khalilzadeh, 2018; Tripathi and Jha, 2018; Love et al., 2016).

Many factors affect the cost of EPC projects. Contracting companies that carry out EPC projects are looking to make a decent profit. Factors such as project pricing method, design and engineering, quality and duration of equipment supply, project execution time, project execution quality, human resource quality, use of information systems, etc. are effective in increasing contractors' profits. In this study, we intend to analyze the relationship of each of the factors affecting the profitability of EPC projects.

a) Theoretical Foundations and Research Background

EPC project management includes the management of the three main indicators of the EPC concept, namely engineering, procurement and construction and combining them with different financial areas, project scope, time, manpower, communications, risk, supply of goods and quality. The three elements of time, cost and quality are known as the sides of the project triangle. Prerequisite for managing financial costs and proper planning in a project is having a complete scenario of feasible actions and obligations of the employer and the contractor (Habibi et al., 2019). The Project Management Body of Knowledge (PMBOK) is a recognized standard for the project management profession that provides guidelines for individual project management. The PMBOK standard is a comprehensive set of related knowledge, which forms work skills. As a result, this phrase means a comprehensive set of project management knowledge. Project management means the application of knowledge, skills, tools and techniques related to project activities in order to meet project requirements. This application of knowledge requires effective management of appropriate processes. The main goal of project management is to complete the project on time and according to the defined budget. In addition, the project manager needs to work closely with the client and must ensure that the project results meet customer expectations (PMI, 2017). The surest way to understand the success of a project is to evaluate it with the strategic goals of the organization. In order for both project management and project success to occur, it is imperative that the criteria for success be formulated and explained from the initial phase. It is important to note that traditional criteria focus only on the economic aspects, while the social and environmental aspects are also important in determining the success of projects. Therefore, for successful project management, a balance and harmony must be established between these parameters so that a successful project can be achieved in the end. Therefore, projects can be considered a failed project even if they are completed on time and on budget. (Frefer et al., 2018). According to the project management standard, Majd and Mortaheb tried to identify the effective risks in EPC projects in order to obtain the critical path, and analyze the impact points (Majd, and Mortaheb, 2008). Chou et al. (2013) conducted research on professional construction knowledge of project management. In this study, a model was proposed in which the effect of various factors on the success of the project is related to the areas of knowledge studied. These areas of knowledge included project scope, time, project cost

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and quality, procurement management, risk, human resources and communications (Demirkesen and Ozorhon, 2017; Meng, 2012; Ngacho, and Das, 2014). Poor performance of construction projects, especially in terms of time and latency, additional costs and quality defects, has attracted the attention of many construction researchers and project managers (Lo et al., 2006). Numerous studies have been conducted in recent years to identify the factors affecting over time and cost in construction projects around the world (Arditi et al., 2017; Cheng, 2014). These factors include defects in contract management, payment for work performed, imported materials, changes in design and defects in subcontractors, and supplier performance. In addition to the mentioned factors, a combination of variables such as poor labor productivity, material shortages, inaccuracies in estimating required materials, fluctuations in material costs, insufficient experience about the type and location of the project are also the main reasons for increasing time and cost identified during an EPC project in Indonesia. Other factors that have led to poor performance in relation to an EPC project in Hong Kong include errors and inconsistencies in design, poor site management and monitoring, and delays in approvals (Olawale and Sun, 2010). Navai et al. (2015), in the article Examining the existing weaknesses in cost management, examines the method of cost management in construction projects, the current attention to them in the project and identifying their strengths and weaknesses, as well as identifying the factors that are currently for cost management of this type of project is considered paid. They consider providing a precise schedule based on the analysis performed at the time of price bidding as a factor to achieve a successful cost management and also they know providing accurate daily reports away from any numbering to the project control department at any time for optimal cost management (Navaei et al., 2015). In a study on the effect of project management knowledge on the achievements of construction projects, Chou and Yang stated that external, operational, project management, engineering and financial factors have the greatest impact on project success by using PMBOK in projects. (Chou, and Yang, 2012). Examining the efficiency of using PMBOK in construction projects, Rodrigues and Crispim stated that cost control indicators, fluctuations, differences in construction design, material shortages or supply delays can play a major role in reducing project efficiency, which by Using PMBOK in these projects, these indicators should be considered to reduce costs (Rodrigues-da-Silva, and Crispim, 2014). De Carvalio et al. (2015), conducted a study on the impact of project management on project success. They consider time and cost as the basis of project success. They first examined the success factors of the projects and then, considering the factors influencing the success of the project, which were mostly provided by qualified experts, they examined various standards in this field and finally noticed the effect of cost and time factors as the most important. Project success factors and project management standard became the most complete standard for project success (De Carvalho et al., 2015). In the article Factors Affecting the Cost of Construction Tenders, Elhaq et al. (2005), Discuss the points of view of cost-effective surveyors based in the UK. They identified about 67 variables that affect the estimation of the pre-tender construction cost through works and interviews. These factors are divided into 6 categories including customer characteristics, consultant and design parameters, contractor characteristics, project characteristics, contract method, procurement method, external factors and market conditions. Then a questionnaire was used to evaluate and rank these factors. The results show that the costs of construction projects are more influenced by architects and consultants (Elhag et al., 2005). Kaming et al. (1997), In the article Factors affecting construction time and cost increase in long-term projects in Indonesia, factors affecting additional construction time and cost in developing countries such as Nigeria, Saudi Arabia and Indonesia and the relationship between the two Analyzed. The scope of this particular study focused only on long-term projects. In this study, thirty-one managers working on long-term construction projects were interviewed and the following factors were identified as factors affecting the cost of long-term projects in Indonesia: Unpredictable weather conditions, increased material costs due to inflation, incorrect estimation, increased costs due to environmental constraints, insufficient experience of project location, insufficient experience of project type, insufficient experience of local regulations (Kaming et al., 1997).

According to the existing literature and talking to the managers of large companies contracting EPC projects, the hypotheses of the present study are presented as follows:

Hypothesis 1: Proper design and engineering has a positive effect on increasing the EPC contractors' profit.

Hypothesis 2: Proper project planning has a positive effect on increasing the EPC contractors' profit.

Hypothesis 3: Timely financing has a positive effect on increasing the EPC contractors' profit.

Hypothesis 4: Timely supply of equipment has a positive effect on increasing the EPC contractors' profit.

Hypothesis 5: Quality manpower has a positive effect on increasing the EPC contractors' profit.

Hypothesis 6: The knowledgeable project manager and workshop supervisor have a positive effect on increasing the EPC contractors' profit.

Hypothesis 7: Project control has a positive effect on increasing the EPC contractors' profit.

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Hypothesis 8: Avoiding complex bureaucracy has a positive effect on increasing the EPC contractors' profit.

Hypothesis 9: Quality materials and equipment have a positive effect on increasing the EPC contractors' profit.

Hypothesis 10: The selection of quality subcontractors has a positive effect on increasing the EPC contractors' profit.

Hypothesis 11: The lack of successive changes in the project implementation team has a positive effect on increasing the EPC contractors' profit.

Hypothesis 12: Adequate expertise in the project area has a positive effect on increasing the EPC contractors' profit.

Hypothesis 13: Proper installation, commissioning and troubleshooting of equipment has a positive effect on increasing the EPC contractors' profit.

Hypothesis 14: Timely payment to the contractor has a positive effect on increasing the EPC contractors' profit.

Hypothesis 15: Applying project cost management has a positive effect on increasing the EPC contractors' profit.

Hypothesis 16: Applying project risk management has a positive effect on increasing the EPC contractors' profit.

Hypothesis 17: Applying project communication management has a positive effect on increasing the EPC contractors' profit.

Hypothesis 18: Creating innovation and using new technologies in the project has a positive effect on increasing the EPC contractors' profit.

Hypothesis 19: Economic stability has a positive effect on increasing the EPC contractors' profit.

Hypothesis 20: Coherence of organizational structure has a positive effect on increasing the EPC contractors' profit.

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Hypothetical Research Model

Based on the hypotheses presented, the hypothetical model of the present study is shown in figure 1.

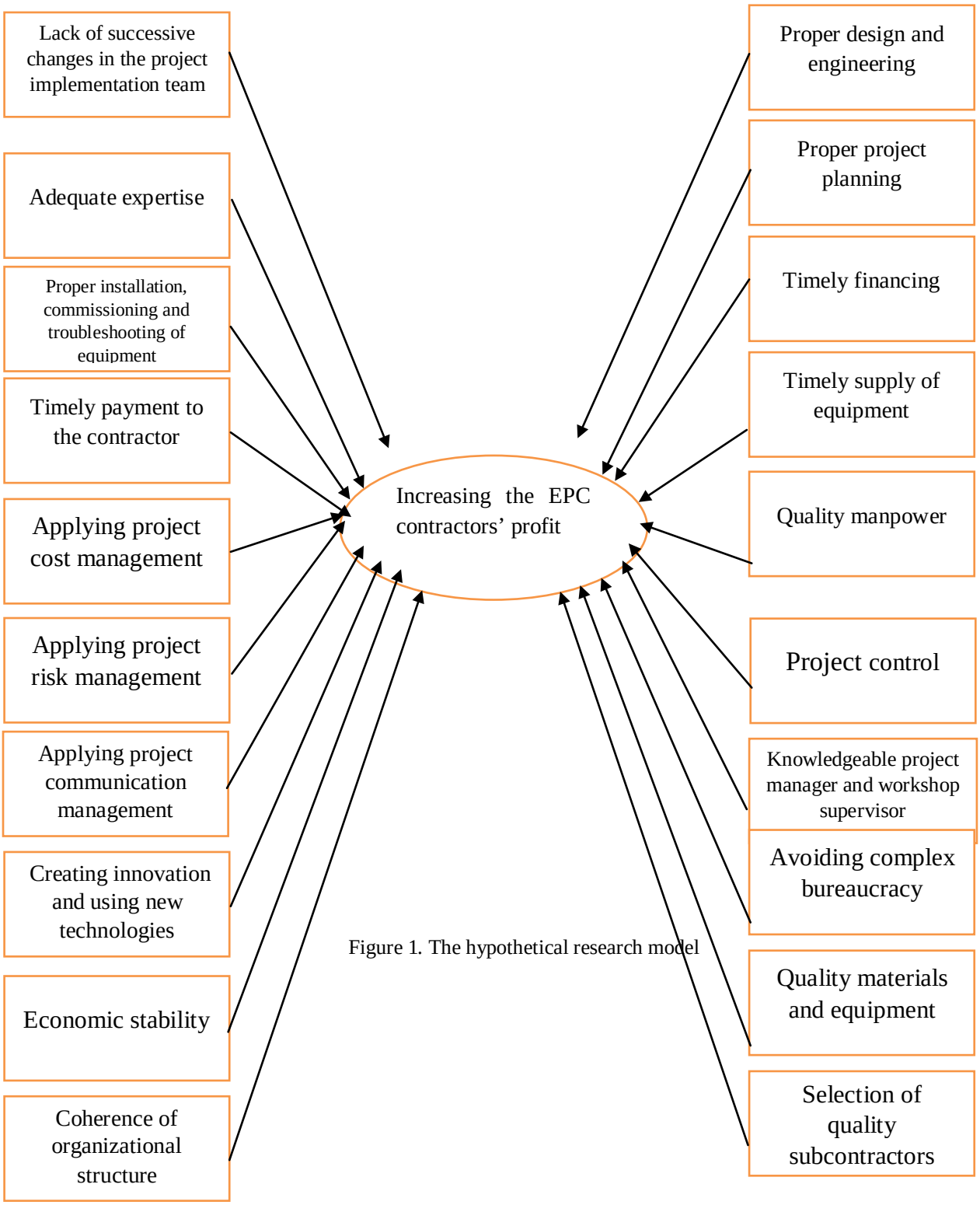

Figure 1. The hypothetical research model

Figure 1: The hypothetical research model

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II. Materials and Method

This research was conducted in a descriptive-survey manner. A questionnaire was used to collect information, which included three general sections. The first part included a guide to the questionnaire and the method of answering the questions, the second part was related to the demographic characteristics of the individuals and the third part was the questions related to the research problem. The statistical population of the present study is the managers and experts of contracting companies in the field of EPC projects. The method used is the Delphi method and the sample size is 40 people; the snowball method was used to select the specialists. In this study, to prove the validity of the questionnaire, first a number of questionnaires were provided to experts and after reviewing the opinions of each expert, the questionnaire was modified and the final questionnaire was developed. Thus, the content validity of the questionnaire was confirmed by a number of experts. Cronbach's alpha was used to evaluate the reliability of the questionnaire. The Cronbach's alpha value obtained using SPSS software was 0.89. If the Cronbach's alpha value is higher than 0.7, the questionnaire has good reliability (Nunally and Bernstein, 1978).

III. Results

The highest frequency was related to the age group of 41 to 45 years with 40%. The highest level of education belongs to the master's degree group with 42.5%. The highest job title belonged to the project manager group at 45%. The highest frequency is related to metro projects at 52.5%. The Anderson-Darling test was used to determine the normality of the data. If the null hypothesis of the Anderson-Darling test is confirmed, the data have a normal distribution and therefore parametric tests can be used to analyze the data. The results of this test are shown in Table 1. According to the obtained results, because the significance level of all variables is more than 0.05, the null hypothesis of Anderson-Darling test is confirmed and the data have a normal distribution. To test the research hypotheses, one-sample parametric t-test was used. In this test, H1 indicates the acceptance of the hypothesis and H0 indicates the non-acceptance of the hypothesis. Table 2 shows the results of data analysis on research hypotheses.

Table 1: Anderson-Darling test results to determine the normality of the data

Variable	Statistics	p-value
Proper design and engineering	0.094	0.192
Proper project planning	0.124	0.200
Timely financing	0.087	0.165
Timely supply of equipment	0.134	0.085
Quality manpower	0.079	0.119
Knowledgeable project manager and workshop supervisor	0.185	0.076
Project control	0.086	0.112
Avoiding complex bureaucracy	0.093	0.087
Quality materials and equipment	0.157	0.134
Selection of quality subcontractors	0.143	0.085
Lack of successive changes in the project implementation team	0.076	0.188
Adequate expertise	0.147	0.121
Proper installation, commissioning and troubleshooting of equipment	0.153	0.067
Timely payment to the contractor	0.076	0.085
Applying project cost management	0.093	0.087
Applying project risk management	0.152	0.0131
Applying project communication management	0.167	0.065
Creating innovation and using new technologies	0.079	0.112
Economic stability	0.154	0.113
Coherence of organizational structure	0.188	0.072

Table 2: One-sample parametric t-test results

Test value = 48						
Variable	t-statistics	Degrees of freedom	Sig. (2-tailed)	Mean difference	95% confidence interval of the difference	
					Lower bound	Upper bound
Proper design and engineering	6.21	39	0.001	8.12	6.59	14.71
Proper project planning	5.78	39	0.021	5.67	5.43	11.10
Timely financing	7.01	39	0.003	6.23	5.96	12.19
Timely supply of equipment	7.58	39	0.0001	8.35	6.71	15.06
Quality manpower	6.92	39	0.001	7.23	6.31	13.54

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Knowledgeable project manager and workshop supervisor	6.32	39	0.001	8.12	6.59	14.71
Project control	6.12	39	0.004	6.35	6.02	12.37
Avoiding complex bureaucracy	8.11	39	0.0001	8.36	6.70	15.06
Quality materials and equipment	7.13	39	0.012	4.21	5.61	9.82
Selection of quality subcontractors	5.26	39	0.024	4.13	5.01	9.14
Lack of successive changes in the project implementation team	5.41	39	0.016	4.19	5.32	9.51
Adequate expertise	5.96	39	0.004	6.34	6.03	12.37
Proper installation, commissioning and troubleshooting of equipment	6.45	39	0.002	7.84	6.49	14.33
Timely payment to the contractor	7.05	39	0.001	8.14	6.61	14.75
Applying project cost management	5.48	39	0.017	4.16	5.30	9.46
Applying project risk management	4.67	39	0.031	7.36	6.37	13.73
Applying project communication management	5.13	39	0.023	7.98	6.52	14.50
Creating innovation and using new technologies	6.15	39	0.0001	8.47	6.73	15.20
Economic stability	5.32	39	0.008	8.19	6.61	14.80
Coherence of organizational structure	4.89	39	0.012	4.85	5.76	10.61

According to the results obtained in Table 2, due to the smaller significance level of all variables than 0.05, all research hypotheses were confirmed. The Friedman ranking test was used to prioritize the factors affecting on increasing EPC contractors' profits.

Table 3: Prioritize the factors affecting on increasing EPC contractors' profits

Variable	Description	Rank	Impact Factor
X1	Timely supply of equipment	1	6.846165
X2	Avoiding complex bureaucracy	2	6.690402
X3	Creating innovation and using new technologies	3	6.20086
X4	Adequate expertise	4	6.097018
X5	Timely financing	5	5.978341
X6	Timely payment to the contractor	6	5.896751
X7	Applying project cost management	7	5.696484
X8	Proper design and engineering	8	5.444296
X9	Knowledgeable Project manager and workshop supervisor	9	5.288533
X10	Quality manpower	10	5.177273
X11	Proper project planning	11	4.873164
X12	Applying project risk management	12	4.769322
X13	Economic stability	13	4.465213
X14	Selection of quality subcontractors	14	4.205607
X15	Project control	15	4.027592
X16	Proper installation, commissioning and troubleshooting of equipment	16	3.997923
X17	Quality materials and equipment	17	3.894081
X18	Lack of successive changes in the project implementation team	18	3.738318
X19	Applying project communication management	19	3.471295
X20	Coherence of organizational structure	20	3.241359

According to table 3 and the results obtained, the proposed model for increasing the profitability of EPC projects is presented as follows, in which the variable "y" indicates the level of profitability.

$$Y=6.84x_1+6.69x_2+6.20x_3+6.09x_4+5.97x_5+5.89x_6+5.69x_7+5.44x_8+5.28x_9+5.17x_{10}+4.87x_{11}+4.76x_{12}+4.46x_{13}+4.20x_{14}+4.02x_{15}+3.99x_{16}+3.89x_{17}+3.73x_{18}+3.47x_{19}+3.24x_{20}$$

IV. Discussion

According to table 3, the parameters of Timely supply of equipment, Avoiding of complex administrative bureaucracy, innovation and use of new technologies, adequate expertise, timely financing, and timely payment to the contractor have the greatest impact on increasing the profits of EPC contractors, respectively.

In EPC projects, the first step is to specify a list of equipment and place an order to purchase it. Until the equipment isn't purchased, practically no progress can be expected for the project. Given that vendors have already been identified, the procurement process should begin as soon as the contract enters into force.

Many companies have complex bureaucracies to buy equipment. Especially when the contractor is a

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large company with multiple departments and the authority to carry out the project is not the responsibility of a particular department. In this case, performing inter-sectoral processes, obtaining approval from different parts of the organization, performing the formalities of the transaction commission, etc., will prolong the project process in both the supply of equipment and construction. To prevent such problems, the contractor company should be project-oriented and give full authority to the project manager to manage and complete the project efficiently within the framework of the company's internal regulations.

In every part of the project, from design and engineering to installation, the use of new technologies and innovation will reduce time and cost. Avoiding traditional methods and using new technologies, especially in the construction sector, will have a significant impact on reducing work time. Up-to-date machinery and equipment, the use of computer methods and robots, will facilitate the manufacturing process. In the design and engineering sector, creating innovation can reduce costs and increase company profits. In this regard, it is necessary for the engineering team to have sufficient expertise and knowledge and the necessary training in connection with creating innovation by the company to be held for them.

Another important factor in the profitability of a project is having enough expertise to do it. Many large companies that win tenders do not have enough expertise to complete the project and outsource a large percentage of the work. Assigning different parts of the project to subcontractors will increase the number of contractors and thus increase costs and time. In this case, the project contractor will act as an intermediary between the subcontractors and the employer, and these exchanges will waste time and financial resources. Therefore, the contractor must have sufficient expertise in the field and outsource small parts of the project to the agenda.

Timely supply of equipment and construction of the project according to the schedule, requires timely financing by the contractor. Financial problems and non-payment on time will delay the schedule, which will lead to a lack of equipment on time and, consequently, failure to build the project on time. The contractor company must plan so that it can inject the necessary financial resources into the project as planned. Of course, this requires the timely payment of the contractor's claims by the employer. In fact, EPC projects are two-way projects in which both the contractor and the employer must meet their obligations according to plan so that both parties can benefit.

Sometimes in EPC projects, the employer can not provide the necessary financial resources to complete the project, which leads to a prolongation of the project implementation process and the contractor suffers. In many cases, the contractor finances the purchase of equipment, but after delivering the equipment to the employer and performing the construction operation, his claims are not paid by the employer. This will result in severe losses to the contractor. In such a situation, to avoid losses, the contractor must consider an appropriate strategy to continue the work.

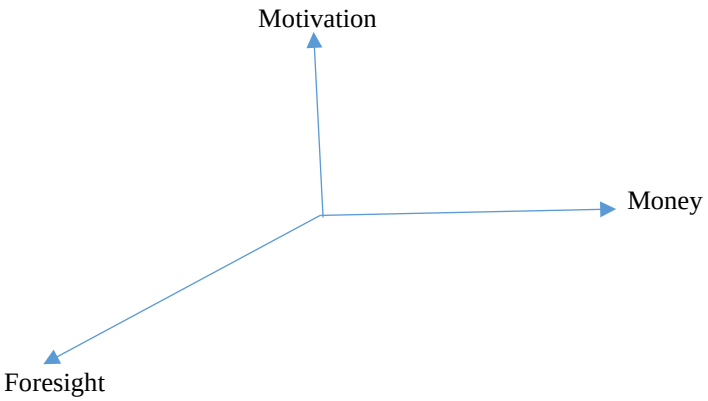

Figure 2: Contractor strategy for the project

According to figure 2, if the employer does not pay the contractor's claims, the contractor can adopt one of the following strategies.

1. The employer has motivation to complete the project on time: In this case, the contractor can use the pressure lever on the employer and in exchange for receivables, complete the continuation of the project.
2. The employer has no motivation to complete the project on time but has the money: in this case, the contractor must adopt a peaceful and patient strategy and gradually receive her claims through management meetings.
3. The employer has neither the motivation nor the money to complete the project: in this case, the focus must be on foresight. If the employer is a large company with the ability to define a large number of projects in the future and the contractor wants to cooperate in those projects, it is better to pursue the same strategy peacefully and patiently.

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But if the contractor does not intend to cooperate with the employer in future projects, the appropriate strategy would be a legal complaint.

V. Conclusions

According to the existing literature, factors such as poor contract management, payment for work performed, delay in import of materials and equipment, changes in design and defects in subcontractors, poor supplier performance, poor labor productivity, material shortages, inaccuracies in estimating required materials, fluctuations in material costs, insufficient experience about the type and location of the project are also the main reasons for increasing time and cost identified during an EPC project in Indonesia. Other factors that have led to poor performance in relation to an EPC project in Hong Kong include errors and inconsistencies in design, poor site management and monitoring, and delays in approvals (Olawale and Sun, 2010). Examining the efficiency of using PMBOK in construction projects, Rodrigues and Crispim stated that cost control indicators, fluctuations, differences in construction design, material shortages or supply delays can play a major role in reducing project efficiency, which by Using PMBOK in these projects, these indicators should be considered to reduce costs (Rodrigues-da-Silva, and Crispim, 2014). Also Unpredictable weather conditions, increased material costs due to inflation, incorrect estimation, increased costs due to environmental constraints, insufficient experience of project location, insufficient experience of project type and insufficient experience of local regulations leads to increased costs (Kaming et al., 1997).

The results of the present study confirm all previous studies. On the other hand, in this study, we calculated the effect of each factor on increasing the profit of EPC contractors. The results show that if EPC contractors design their structure in such a way that it is far from any complex administrative bureaucracy and uses specialized human resources and exploits new technologies and innovations, the project will be completed in a short time and it will be done with high quality, which will reduce costs and increase profits. In this regard, the procurement and purchase of project equipment must be done according to a strict schedule, which requires financing for the project. For this purpose, the cash flow of the project must be carefully designed first, the critical points in it must be identified, and the cash flow chart must be updated on a monthly basis.

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Strategic Direction as an Input to Human Resources Planning

By Ulises Betancourt Morffis, Yadrián Arnaldo García Pulido, Wendy Lorenzo Suárez & Yoel Almeda Barrios

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Summery- Human resources planning, as a key activity and essentially integrating Human Resources Management, is the process by which a company ensures a sufficient number of personnel and fulfills the objective of optimizing its human structure. It makes it possible to foresee future needs based on criteria of social commitment and overall profitability and to determine the ideal number of employees needed at any given time, with the right qualifications or skills and in the right positions in the present and foreseeable future. For years, strategy experts have emphasized the importance of clearly defining a company's strategic framework because it allows it to create its identity, purpose and direction. At the same time, this framework serves as an instrument to appropriate a greater portion of the value created from, for example, the implementation of more and better business innovation practices.

Keywords: human resources, planning, strategic management.

GJHSS-E Classification: FOR Code: 150305



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Strategic Direction as an Input to Human Resources Planning

Ulises Betancourt Morffis [α], Yadrián Arnaldo García Pulido [σ], Wendy Lorenzo Suárez [ρ] & Yoel Almeda Barrios [ω]

Summary- Human resources planning, as a key activity and essentially integrating Human Resources Management, is the process by which a company ensures a sufficient number of personnel and fulfills the objective of optimizing its human structure. It makes it possible to foresee future needs based on criteria of social commitment and overall profitability and to determine the ideal number of employees needed at any given time, with the right qualifications or skills and in the right positions in the present and foreseeable future. For years, strategy experts have emphasized the importance of clearly defining a company's strategic framework because it allows it to create its identity, purpose and direction. At the same time, this framework serves as an instrument to appropriate a greater portion of the value created from, for example, the implementation of more and better business innovation practices. It is for this reason that the objective of this research is to analyze how the strategic direction constitutes the main input element for Human Resources planning, from the point of view of different authors and consulting institutions.

Keywords: human resources, planning, strategic management.

Resumen- La planificación de recursos humanos como actividad clave y esencialmente integradora de la Gestión de los Recursos Humanos, es el proceso mediante el cual una empresa se asegura del número suficiente de personal y cumple con el objetivo de optimizar su estructura humana. Esta permite prever las futuras necesidades desde criterios de compromiso social y rentabilidad global y determinar el número ideal de empleados necesarios en cada momento, con la calificación o competencia oportuna y en los puestos adecuados en el presente y futuro previsible. Durante años, expertos en estrategia han resaltado la importancia de definir claramente el marco estratégico de una empresa debido a que éste le permite crear su identidad, propósito y dirección. A la vez dicho marco sirve como instrumento para apropiarse de una mayor porción de valor creado a partir de, por ejemplo, la implementación de más y mejores prácticas de innovación empresarial. Es por esta razón que el objetivo de la presente investigación es fundamentar cómo la dirección estratégica constituye el elemento de entrada principal para la planificación de los Recursos Humanos, desde lo planteado por diferentes autores e instituciones consultoras.

Palabras claves: recursos humanos, planificación, dirección estratégica.

I. Introduction

In recent times the advance of technology constitutes a fundamental part in the development of any organization, as well as its financial and material resources, but it is important not to leave aside Human Resources (HR). The latter plays an essential role in the proper functioning, quality and efficiency of any organization. This is where the term HR comes from to describe the people who work in organizations. Therefore, in view of the new challenges facing companies, they must focus essentially on understanding human behavior in their work environment, as well as on their training and development.

Modern organizations, both public and private, operate in an environment where change is constant and permanent. The need for survival of any organization makes instruments such as HR strategic planning a proactive way for them to be able to face organizational actions, which allows them, in one way or another, to foresee the future and get ahead with their strategies. (Mendoza et al., 2016)

According to Vazquez and Zenea (2017), constant transformations indicate to organizations that it is strategic, for their growing and sustained development, to have highly competent staff. It is essential to pay attention to human capital management (HCM), with the permanent search for new methods and tools that, supported by the competencies of workers and the new trends that govern the current labor world, facilitate an increase in the efficiency and quality of processes.

To add value to the company through HR planning, the company has the obligation to take care of clearly articulating the common issues that hinder the achievement of the objectives of other plans and strategies, which have not been identified (Amrutha and Geetha, 2020). It is necessary for this, to identify structural problems that need to be solved by the organization through motivation, commitment and modification of its employees.

The need for planning in organizations is so obvious and so great that it is difficult to find someone who does not agree with it. But it is even more difficult to apply the planning processes in the human resources of the organizations, if the necessary techniques to do so

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are not available. Therefore, the main objective pursued in this research is to substantiate how strategic management constitutes the main input element for HR planning.

II. Methodology

The research method employed was documentary analysis of authors and consulting institutions, reflected in recent scientific literatures.

III. Results and Discussion

In the last two decades there has been a growing interest of HR professionals in getting involved in the strategic planning of organizations as a way of reinforcing their importance in these organizations. According to Martell Sanchez (2021) strategic planning is not only a key tool for the manager, it also implies an interactive process from top to bottom and vice versa in the organization. General management is in charge of setting overall goals for the company and establishing priorities. The lower units determine plans and budgets for the following period, which are consolidated and corrected by the higher units, which send them back downwards, where they are further refined. As a result, the establishment of a formal strategic planning system brings strategic concern down to all levels of the organization. The company selects, among several alternative paths, the one it considers most suitable for achieving the proposed objectives. Generally, it is a long-term global planning.

Strategic HR management can be conceived as a large umbrella that integrates HR practices, policies and philosophy, with the objective of preparing the organization to achieve its strategic goals. Ideally, these practices and policies should form a system capable of attracting, developing, motivating and training the necessary number of employees to ensure the effective functioning of an organization. González (2011) states that this can be broadly defined as the process of analyzing HR needs, as the internal and external environments of the organization change, and the application of the consequent proactive strategy to ensure the availability of HR demanded by the organization.

Chiavenato (2011), states that the HR processes are: integrate, organize, retain, develop and evaluate human talent. Due to their interaction, any change in one of them influences the others, feeding back new motivations, thus producing changes and expansion in the whole system. Ramírez Molina et al. (2018) propose, based on this theory, that there are five (5) processes in HR Management. These can be seen in Figure 1.

PTH	PTH INDICATORS
(1) Provisioning subsystem	Recruitment and personnel selection
(2) Organizational subsystem	Design, description and evaluation of jobs
(3) Maintenance subsystem	Remuneration. Quality of life at work. Relationship with people. Age management.
(4) Development subsystem	Training and development of personnel
(5) Audit subsystem	Human resources information system

Source: Own elaboration

Figure 1: Human talent processes (PTH).

In order to provide a solution to the research objective, previous research on the subject was analyzed, which serves as a basis for the HR management model. Table 1 shows the key elements of the different models analyzed.

Table 1: Key elements of the research consulted.

Models	Key elements
González and Cabrera (2010)	Strategies, contingencies and job design.
Urrutia (2013)	Key activities articulated to strategy, culture, policies and objectives.
Perez and Rondon (2017)	Organizational effectiveness. Job design, internal and external analysis.
Prado Gomez (2019)	Strategy and business philosophy. Situational factors. Task technologies. Internal and external analysis.
Matos et al. (2021)	Strategy, culture, policies and objectives.

Source: Own elaboration.

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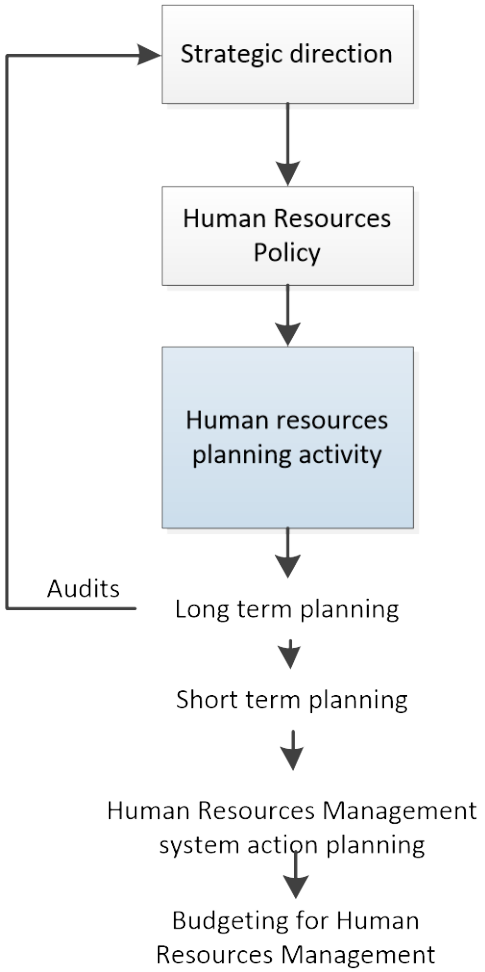
In addition, the HR Management Systems proposed by: Bastidas Rodelo (2020); Cuesta Santos (2021); Chiaven (2021): Bastidas Rodelo (2020); Cuesta Santos (2021); Chiavenato (2007); Ramírez Vázquez (2017). According to the analysis carried out, it is recommended to use for Cuban institutions the systemic process comprised by HR planning, proposed by Cuesta Santos (2021) (Figure 2), since it takes into account the main features and current trends of HR Management, the conception of Human Capital Management and the approaches proposed by the National Bureau of Standardization (2007).



Source: Own elaboration.

Figure 2: Systemic process involved in HR planning.

Figure 2 shows several essential inputs to proceed with the key activity of HR management planning. Of course, the first input is Strategic Management. At this functional level of HR management, strategies are followed by HR policies, together with the budget. Subsequently, the first entry to the planning block is the organizational structure. Then other important key HR management activities continue to be entered, and as many as possible should be considered. This will make it possible for the management planning to be truly comprehensive and systemic.

According to Thompson et al. (2012), strategic direction is a process of continuous and systematic movement that provides better guidance to the entire organization on the crux of what it wants to achieve. It allows to be more attentive to changes, new opportunities and threatening developments. It provides ideas for evaluating budget requests, capital investment and new personnel. It allows to allocate resources in areas that produce results and support the strategy, it helps to unify the numerous decisions related to strategies throughout the organization. Strategic management creates a more proactive managerial attitude and thus counteracts tendencies toward reactive and defensive decisions.

Various academic and professional publications highlight the value of structuring and clearly defining a company's strategic framework. This allows the creation of its identity, purpose and direction, as an instrument by which the company's essential values are transmitted to its stakeholders (Bailey, 1996). The concepts and

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elements that make up strategic management, according to Silva Murillo (2010) and Pedros and Gutiérrez (2012), are: mission, vision, values and strategic goal or objectives, as shown in Figure 3.



Source: Own elaboration.

Figure 3: Elementary concepts that make up strategic management.

Collins and Porras (1996), define a company's mission as the core ideology that determines the enduring character of an organization, providing a coherent identity that transcends product life or marketing cycles, technological advances, management fads and individual leaders.

Research by Pearce and David (1987) was the first attempt to empirically study the relationship between mission statements and firm performance. They sought to test the value of the statements by using content analysis to review the components of the statements of Fortune 500 companies. Their findings supported that the inclusion of the proposed mission statement components, is positively associated with a firm's financial performance, however, they assert that there are many variables that affect organizational performance, so the results do not suggest that their inclusion in mission statements directly improves organizational performance, as a firm can have a comprehensive mission statement and still experience a decline in sales and profits for various reasons (Contreras-Pacheco et al., 2021).

Vision according to Kirkpatrick (2017), is the positive impact the organization wants to have. A vision statement is a formal description of the desired future state of the organization in the long term. Contreras-Pacheco et al. (2021) states that several studies show that companies whose vision focuses on a desired future state are better prepared for change. A correct vision, with the right characteristics and components aimed at cultivating a culture of innovation as a fundamental pillar at all levels of the organization, allows the company to gain a competitive advantage.

Contreras-Pacheco et al. (2021), identified six (6) variables that allow to understand the relationships between mission, vision, competitive advantage and innovative capacity in a company, as shown in Table 2.

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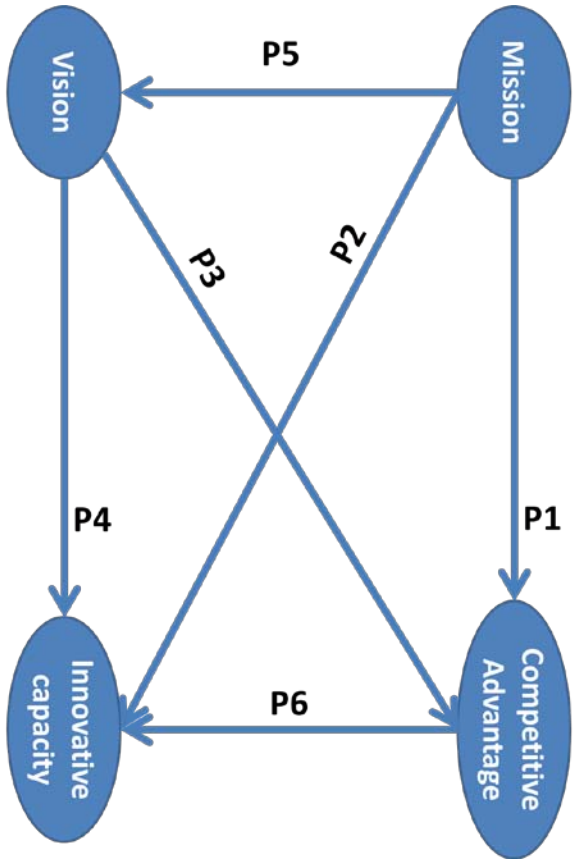
Table 2: Structural model and relationship of the variables identified by Contreras-Pacheco et al.

Variables		Structural Model
1	Positive relationship between the quality of the mission statement and the ability to permanently build a company's competitive advantage. In other words, a better quality of a company's mission statement is a clear indicator of its possession of competitive advantage.	
2	Positive relationship between the quality of the mission statement and the innovative capacity of a company. In other words, a better quality of a company's mission statement is a clear indicator of a high innovative capacity.	
3	Positive relationship between the quality of the vision statement and the ability to permanently build a company's competitive advantage. In other words, a better quality of a company's stated vision is a clear indicator of its possession of competitive advantage.	
4	Positive relationship between the quality of the vision statement and the innovative capacity of a company. In other words, a better quality of a company's vision statement is a clear indicator of a high innovative capacity.	
5	Positive relationship between the quality of a company's mission statement and the quality of its vision statement.	
6	Positive relationship between a company's innovative capacity and its competitive advantage.	

Source: Own elaboration.

As a result of the above, all companies, organizations or institutions should take into account that, when drawing up the work policies of the different areas, they should be aligned and contribute to their strategic planning. HR planning must go hand in hand with these, as it is a guarantee of having all the key processes in place in order to achieve the goals set. They must be taken into account from the recruitment or selection of personnel and training or improvement. This makes it possible to have workers who know why and for what they work and to strengthen their sense of belonging.

The strategic planning of the company identifies several critical factors to achieve the success of the organization, while trying to find a way to place it in a better position and be in a better position to compete in the market. To this end, the planning process provides a clear formulation of the organization's mission, a commitment of the staff to that mission, an express statement of the starting assumptions with a plan of action adjusted to the available resources. This must include trained and educated personnel. HR planning contributes significantly to the strategic management process, as it provides the means to achieve the expected results of the planning process.

HR demands and needs are derived from strategic and operational planning, and then compared with existing needs. Recruitment, training and reassignment programs are developed for this purpose. Any human resources plan, to be effective, must be based on the organization's long-term operational plans. Its achievement will depend on the degree to which the HR department can integrate effective workforce planning into the company's overall planning process.

Mendoza et al. (2016), propose that in order to integrate HR into strategic planning, a SWOT or HR SWOT matrix can be performed. This is because the constant changes in the environment modify the state of the organization and it is necessary to know the social, demographic and union environment, which directly

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influence the internal environment of the work organization and employees.

The competency-based HR planning process is considered as the effective way to evaluate the objectives of the section. Through it, an analysis is made of the current situation where the internal and external aspects of the organization are studied, the gap between what exists and what is envisioned is analyzed to then develop strategic, alternative and functional plans, thus proceeding to the implementation of the plan to culminate in the evaluation. This evaluation is recommended as circumstances change. The diagnosis of the environment helps to obtain a better understanding of the context in which HR decisions are and will be made.

In this sense, there are several issues to consider, aspects such as the degree of aging of the working population, migratory flows, participation of minority groups in the composition of the labor force, level of unemployment, incorporation of women into the workforce, level of training, among others, are aspects of mandatory consideration for HR planning. Granjo (2008) stated that it is important for the organization to identify its relevant labor market, in its broadest sense, without referring to any specific job position, which will be marked by the geographical scope, the nature of the business and the competitive situation of the firm.

For Benito (2003), creating a strategic HR plan is a very serious decision that requires some time of prior reflection on its opportunity and possibilities of success. To carry out a project of this nature entails a double commitment, on the one hand, with the company's management and, on the other hand, a very close and direct commitment with the HR function itself and with the team of professionals who develop it. However, it is a task that must be developed, since the benefits are greater than the proposed challenges. With this, structural models can be achieved that prove a good work performance.

In order to fulfill the strategic plan, it is necessary to take into account the following aspects:

- Imagine all possible paths from the current situation to the ideal situation.
- Study from all possible points of view (technical, human, economic, etc.), all the proposed solutions.
- Eliminate those that do not seem feasible and select those that do seem to lead to the objectives.
- Choose the most appropriate option for the strategic HR plan.

The plan should include the way in which the competencies that are not currently available and that are necessary will be acquired. In addition to the ways in which the competencies that the company already has are going to be developed. All this must be present in the strategic objectives and in correlation with the company's vision.

IV. Conclusions

The conclusions of the study are that companies should follow the following principles in their HR planning:

1. Relate the strategic direction of the company to each key activity of HR Management.
2. To achieve a greater contribution of each key activity of HR management to the strategic management of the company, in order to have innovative, competitive workers with a sense of belonging.
3. To implement each of the human talent processes as part of a strategic objective.

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Exploration of Barriers and Success Factors of Sustainability of the Bangladeshi Textile Industry at Various Stakeholders' Level from Social, Environmental and Economical Concern

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Abstract- This paper aims to explore the barriers and success factors of sustainability of the textile industry of Bangladesh through surveys at various stakeholders' levels from social, environmental, and economic concerns.

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Keywords: barriers, success factors, sustainability, stakeholders, textile industry, bangladesh.

GJHSS-E Classification: DDC Code: 333.7 LCC Code: HD75.6



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Samirah Mustafa [α] & Kamol Gomes [σ]

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The findings and results indicate a positive effect on sustainability can be ensured through the development of social, environmental, and economic concerns of the textile industry. Moreover, it also indicates various kinds of barriers and success factors having direct and/or indirect impact(s) on the textile industry of Bangladesh. Few limitations are faced by the researchers as well.

Finally, this paper contributes to the execution of the measures suggested by the stakeholders against the barriers and increase the success factors for the future development and sustainability of the textile industry of Bangladesh or elsewhere.

Keywords: barriers, success factors, sustainability, stakeholders, textile industry, bangladesh.

I. Background of the Study

The Ready-Made Garment (RMG) industry is the number one export earner of Bangladesh. In the 2017-18 Fiscal Year (FY), a total of US$ 30.15 Billion was generated in exports made by the garment industry. It also employed more than 4.5 million workers dispersed among 4560 factories involved in exports of Ready Made Garments all over the world.

Currently, the sector accounts for more than 84 percent of total exports in Bangladesh (Textile Today, January 26, 2019). After the liberation war, it is the garment sector that has become the backbone of our economy by becoming the second-largest garment exporter in the whole world (with a growth rate of 8.7 percent). In recent years the industry has boomed resulting in a rise in the number of factories engaged in garment production.

The textile industry of Bangladesh says a significant story of the country's prosperous transformation towards having a main export-oriented economy. The factors that contributed to the successful marching of Bangladesh in this sector are global trading agreements, cheap labor cost, government policy support, and vigorous private entrepreneurship. All these things have facilitated Bangladesh to gain a fine share in the global garment business.

From the early 1990s onwards the RMG[1] industry has become the biggest foreign exchange earning sector in Bangladesh's economy. In 2005-06, Bangladesh earned nearly $8 billion by exporting garment products, which became $30.88 billion in 2015-16 FY[2] and $31.79 billion in the following FY, with a targeted $50 billion by 2021.

RMG currently covers over 84 percent of the total export of the country, having the vast majority of the country's foreign exchange. (Textile Today, Jan 2019) After the termination of the Multi-Fiber Agreement at the start of 2005 and then switch to the New World Trade regime, it was dreaded that Bangladesh's successful textile industry might suffer, as it could lose business to developed, cheap labor and ultimately low-cost countries like China and developing ones like India. But fortunately for Bangladesh, so far this prediction has been proved wrong. At least 4.5 million workers are working in the Bangladesh garment industry. The majority of them are women, coming from rural poor families and staying over in the city around their workplaces and doing jobs in the RMG factories. These garment workers are the lowest wage earners, which is around $100 a month.

In Bangladesh, fire mishaps in export-oriented garment factories continue to kill workers, most of them are usually women and children. In recent time's two accidents in Savar Rana plaza and Ashulia Tazreen Garments near Dhaka left about 2000 deaths. According to the observers, such deaths cannot be regarded as accidental; these are murders, caused by the negligence of the factory authorities (The Daily Star, May 2013). There is a growing concern that labor rights are mostly violated in the Bangladeshi RMG industry.

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[1] RMG-Ready Mate Garments
[2] FY- Fiscal Year

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The empirical evidence suggests that labor rights have not yet been established in the RMG industry, with the last one took place in January 2019, between the workers and authorities over pay grades. Bangladesh is committed to secure labor rights for the well-being of laborers by ILO membership. But the result observed in the RMG industry is simply unsatisfactory which mostly shows the breach of such commitment(s).

Researchers, journalists, and labor rights activists claim that the damage would not happen if the government could have formulated and implemented a comprehensive and effective labor law that would incorporate labor rights in the RMG industry. Thus the realities on the ground demand fresh scrutiny and answer to the existing barriers and find some ways to make the RMG textile industry more sustainable.

II. Introduction

The Readymade Garments industry is one of the fastest-growing industries in Bangladesh. The UK (Parker, 2011) is one of the most vital markets for this industry from Bangladesh including but not limited to Marks and Spencer, H&M, Next. Eighty percent import of the UK (Parker, 2011) is generally done from the South Asian region.

Initially when this industry has been started to be in operation total share of export was just .0.02 (Bhattacharya & Rahman, 1999) percent but that share has become 67.92 (Bhattacharya & Rahman, 1999) percent within only twenty years and this rise demonstrates the growth of this industry simultaneously.

Despite this growth due to the nature of our economy or other heterogeneous reason, this industry is viewed as a starter (Saxena, 2014) in the south Asian region. And this to be in starter can be well linked with the taking of condition (M. R. I. Khan & Wichterich, 2015) of our economy. The expansion of the industry can be illuminated by the availability of low-cost labor, particularly women, and simple technology essential for the industry (Khosla, 2009), and also by the substantial support provided by the government, including duty drawback facilities, tax holidays, cash assistance, income tax rebates, creation of export processing zones and zero tariffs on machinery inputs. (Ahmed, 2009; Muhammad, 2007; USAID, 2007; Rashid, 2009).

Due to being an overpopulated country as well as a developing state, Bangladesh has abounded with labor and most of them including both males and females are ready to work with the minimum they are offered. The expansion of the Ready-Made Garments sector in this country is closely associated with such an abundance of cheap labor as well.

The current scenario of this sector is both frustrating and optimistic. The frustration comes when we are taking the safety issues, CSR[3] initiatives, environmental pollution into consideration, and the optimism come when we are taking the growth of this sector under consideration as well.

And a clear imbalance is observed in the core of these two and the sustainability of this sector depends on how this imbalance is treated. The stakeholders of the RMG industry are dissimilar – employees, government, the community in which it functions, media – and businesses have restricted resources and capabilities to meet their demands (Freeman, 1984).

Knowing these stakeholders, their power and interests, and having a good relationship with them is critical for better management, strategic planning, and long-term sustainability of the industry. However, RMG industries in developing countries have traditionally been driven by multinational buying companies and their requests (Islam and Deegan, 2008) rather than managing relationships with other key stakeholders, particularly the employees.

Research directs the presence of a conflict between international buyers' purchasing practices – claim for lower-priced products within a short period – and their persistence in obeying with codes of conduct (Barrientos, 2013). Many suppliers involve in reckless business practices that favor the first at the cost of the second, such as lowering wages, saving costs, and making workers engage in overtime (Lund-Thomsen and Lindgreen, 2014; Ruwanpura and Wrigley, 2011; Tokatli et al., 2008).

Major Bangladesh laws such as the Company Act 1994, Bangladesh Labor Law 2006, Environmental Conservation Act 1995, and Environmental Preservation Policy 1997 are not adequately focused on compliance with CSR (Nasrullah and Rahim, 2014; Rahim, 2012). As a result, the corporate regulation framework is not yet in a position to stimulate the well-being of stakeholders other than the government and shareholders (Rahim, 2012).

III. Literature Review

Due to the cheap labor and tangible capital is considered as one of the primary sources of competitive advantage, China, currently, the largest global textile and garments exporter has been facing a shortage of workers due to elevated labor costs, forcing it to shift into heavy and high tech industries instead of garment manufacturing (Textile Today, 2017).

It has significantly increased competition among other textile manufacturing countries however the international retailers are still trying to maintain profit margin similarly by finding cheaper locations to outsource their garments. Despite China, Sri Lanka, and

[3] CSR- Corporate Social Responsibility

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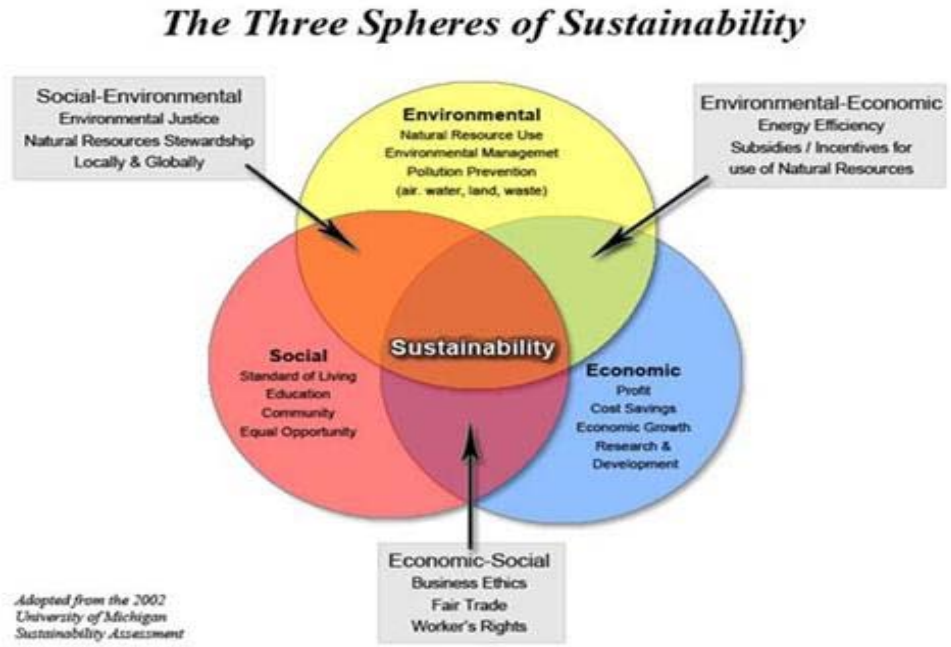
India shifting away from the industry seeking cheap labor, Bangladesh cannot indefinitely exploit the cheap labor costs due to the increasing demands of workplace safety and compliance demands from the buyers concerning international standards, which has increased the cost of production for Bangladesh (Khatun, 2017) The tragedy involving fire in Tazreen Garments in 2012 and the collapse of the Rana Plaza building in 2013 highlighted the dire need of safety compliances (Chowdhury et al., 2018) and increase of productivity through improved working environments, job satisfaction, etc. in the industry (Abdullah, 2009). Such tragedies have not only created moral outrage from around the world and reinforced the significance and the necessity for CSR than ever before but have also exposed the laws in labor-based export industries such as the RMG industry in developing countries.

The recent tragedies in developing countries have activated a range of reform initiatives and suggestions from a wide range of domestic and international stakeholders (Yardley, 2012c), but the advancement is slow. The significance of economic globalization lies in its "ability" of breaking down the national economic barriers for the spread of international trade, expansion of financial and production activities, and the rising power of MNC[4]s and international financial institutions (Khor, 2000).

The concern is that globalization, particularly in developing countries, is not an indigenous procedure from either the economic or the political standpoint (Hirst and Thompson, 1996; Wade, 1996). In our study, a model Adopted from (University of Michigan, 2002) has been considered while developing the conceptual framework and questionnaire.



a) Social and Economic concern

The certainties of globalization and harder competitive conditions, as well as the development in the power of corporations, put pressure on businesses to scrutinize their social responsibilities and to incorporate responsible practices with their business operations (Adams, 2008; Burke and Logsdon, 1996; UNCTAD, 2011).

In the Western world, auditing, reporting, and programming CSR is now an industry in its own right (Brown, 2011; Dusuki, 2008); the same cannot be said of developing countries. CSR has emerged as severe distress for the survival of this labor-intensive, export-oriented industry and Bangladesh like other developing countries is now facing the encounter to address these disputes for the sustainable growth of the industry (Rahim and Wisuttisak, 2013; Nasrullah and Rahim, 2014).

Consumers are aware of the procedures followed to produce the products regarding what they would wear (Dickson, 1999; Stanforth and Hauck, 2010). To keep the companies' brand value safe, the fashion and textile retailers require the suppliers to obey certain codes of conduct to avoid OHS[4] scandal risks, which might also influence their financial performance in the long run. (Welford and Young, 2002; Parry et. al., 2002).

The focus on fashion and textiles industries for the organizational health and safety (OHS) lies on any particular subsector, for example, pregnant clothing workers in developing countries, etc. (Barnes and Kozar,

[4] MNC's-Multi National Companies
[5] OHS-Occupational Health and Safety

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2008) Due to scarcity of workplace safety (De Koster et al., 2011), the limited studies of Organizational Health and Safety (OHS) focuses on the safety environment and safety culture in organizations (Baer and Frese, 2003; Das et al., 2008; Hofmann and Stetzer, 1998; Katz-Navon et al., 1988; Naveh et al., 2005; Smith-Crowe et al., 2003; Zohar, 1980), where the worker's safety observation is a vital interpreter of the safety performance for the organization(s). The common thread that explicitly or implicitly runs through these studies is the argument that there is a need for "surrogate accountability" in developing countries with fragile institutions, high corruption levels, and the incompetence of governments to implement code of practice (cf. Belal et al., 2015; Rubenstein, 2007).

From this point of view, corporations and factory owners are characterized as "power wielders" who repeatedly disrupt laws, protocols, and agreements. Accountability holders such as workers and local communities are incapable to avoid the breaches of laws and/or social standards due to substantial power asymmetry and other disadvantaging factors such as extreme poverty and vulnerability, lack of education, etc.

Any accountability system needs to be defined by the following six dimensions: "who, to whom, about what, through what processes, by what standards and with what effect" (Mashaw, 2005, p. 17). In cases where accountability and auditing practices are externally enacted on developing country suppliers, the pressure between transparency, and responsibility may be further intensified.

This is because, by pressurizing the suppliers to obey with codes or standards, one enforces on the corporation the role of a surrogate accountability holder. However, given the distance between multinational enterprises (MNEs) and their suppliers (both geographical and psychic), the former most likely lack enough understandings of the context-dependent socially grounded requirements of the workers (cf. Belal and Roberts, 2010; Lund-Thomsen, 2008; Sinkovics et al., 2014).

However, investigations display that the effect of social upgrading is rather unevenly distributed between different groups of workers, such as skilled and unskilled (e.g. Barrientos et al., 2011), regular and irregular (e.g. Barrientos and Kritzinger, 2004; Rossi, 2011), and male and female (e.g. Barrientos et al., 2005). Most suppliers tend to be unwilling to permit rights that encounter deeply embedded labor relations or social means, hoping to avoid interference to the production process. As a result, concerns such as gender discrimination, freedom of speech, and workers' skills development are still mostly abandoned.

The accountability of the corporations and factory holders in the developing countries are breached frequently, and due to the fragile institutions, high exploitation levels, the incompetence of governments to implement regulations, it has been made difficult to prevent the breaches of laws and/or social customs for the power asymmetry and other factors like poverty, vulnerability, etc. (Belal et al., 2015; Rubenstein, 2007) Despite increasing and imposing the accountability and auditing practices on the developing country suppliers, the tension between transparency and responsibility might get intensified since they are pressurized to fulfill with codes or standards but the buyers get to go without having deeper insights on the necessity of more prices to be paid to acquire funds to comply with the required codes and standards existing thoroughly.

(Belal and Roberts, 2010; Lund-Thomsen, 2008; Sinkovics et al., 2014). The analysis yielded two key findings (Sinkovics et al., 2016). First, external pressures on the firms to implement the measurable/tangible measurements of the BSCI and the Accord accomplished their projected purpose, that is, the establishment of a safer, better equipped, and more comfortable working environment. Nevertheless, there have been several unintended consequences.

Due to the high cost of compliance, the case companies were required to dismiss initiatives that had furnished to some of the socially grounded necessities and urgencies of workers. A closer examination of these initiatives through the lens of social value conception (Sinkovics et al., 2015) directed to the following reflection: while certain compliance initiatives can be categorized as social improvement and thus fulfill their intended resolution, they may at the same time abolish prevailing social value and lead to the damage of certain social, economic, and cultural rights.

Second, to protect the substantial cost of compliance and to guarantee the survival of their companies, the owners have invested in technological upgrading. At the same time, they have augmented the pressure on the workforce to further enrich the efficiency of production. Despite this economic elevation, there has been no development in workers' skills.

Rather, it has caused an increase in the power discrepancy and the elimination of unskilled workers from the job market. (Sinkovics et al., 2016) As a result of the high cost of compliance, the case firms had also been forced to withdraw services such as free cooked lunches and prayer facilities that had been highly appreciated by the workers.

These are all examples of the demolition of previously existing social value, resulting in the loss of social, economic, and cultural rights (Sinkovics et al., 2015). The cases also aid as an illustration of the prioritization of suggested needs over felt needs by compliance mechanisms (cf. Goldewijk and De Gaay Fortman, 1999). The firms have to develop themselves financially and managerially with their limited resources by properly adapting to the diverse range of regulations along with the costs of compliances acquired.

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To use the costs of compliance as an advantage, proper promotion is required by them along with increasing awareness through campaigns to make the market more competitive for the future by proper implementation of compliance. (Gordhan K. Saini, 2011)

b) Social and Environmental concern

With globalization and increased awareness of the environmental, ethical and social impacts of trade, consumers in developed countries rely on consumer organizations to provide them with independent, comparative and verifiable information on goods and services in terms of safety, performance, quality, and value for their money, enabling them to make choices and purchase decisions. (Salvador, 2007). Belal et al.'s (2015) study suggest that the current growth in Bangladesh's garment industry is mostly because it involves a highly polluting manufacturing process.

From this, it follows that, in their search for profit maximization, MNCs are not only outsourcing their production but also the pollution and labor exploitation that is "necessary" to preserve costs low. Social upgrading is defined as the practice of enhancement of the rights and privileges of workers, as social actors, which increase the value of their employment (Barrientos et al., 2011). Barrientos et al. (2011) furthermore specify that social upgrading has two components: measurable standards and enabling rights.

Measurable standards are the more quantifiable aspects of employment, such as wages, working conditions, and working hours. Empowering rights deal with more sophisticated matters, such as discrimination, the sovereignty of association, freedom of speech, and career development.

c) Environmental and Economic concern

Key features for environmentally sustainable product innovation includes knowledge of market, law, and legislation, inter-functional collaboration, and innovation-oriented learning and R&D[5] investments Besides, knowledge on environmental laws and regulations are as well as policies concerning financial issues and information initiatives involving green innovation are necessary as well. (Medeiros et al., 2014).

Sustainable product design is a design philosophy and practice in which products contribute to social and economic welfare, have trivial influences on the environment, and can be manufactured from a sustainable resource base, which is the inclusive concept of eco-terms (Brezet, et al., 1997; Fuad and Luke, 2002; Simon, et al., 1998) due to the deterioration of the overall conditions in our surroundings.

Life Cycle Assessment (LCA) which is the evaluation of the environmental aspects of the production system through all stages of its life cycle, has been developed to help environmental management in sustainable development in the long term. Sustainable development requires improvements in eco-efficiency; how we use energy and materials and how we minimize waste (Niinimäki, 2006).

The life cycle consists of the extraction of raw materials, the design and formulation process, manufacturing, packaging, distribution, use, re-use, and waste disposal, ultimately increasing the responsibilities of producers, which do not end at the factory gate (Fuad and Luke, 2002; Jensen et al., 1997). A textile factory's wastewater must be well treated from toxins, harmless chemicals and substances, dye, and heat; and the wastewaters should be treated using purification plant(s).

Using fewer chemicals means further savings in the production processes and financial benefit can also be achieved since less waste is generated and a fraction of hazardous waste is also reduced. Besides, dealing efficiently with energy, water, and auxiliary materials during production can save a considerable amount of costs (Talvenmaa, 1998).

Environmental efficiency, or eco-efficiency, means reusing the product, recycling the material after use, and producing less waste in the end (Rissa, 2001). While approaching sustainability, other aspects have to be estimated: how the natural dye has been cultivated, what kind of textile materials have been used, the textile processing itself, what kind of helping agents and chemicals have been used in the dyeing process, wastewater treatment and so on (Niinimäki, 2006).

Researchers suggested that an integration of the company's core business activities and specific strategies toward sustainability is necessary to build its competitive advantages (Galbreath, 2006). For example, some companies may take the ethically oriented approach toward sustainability where actions might be demonstrated toward their stakeholders rather than market transactions (Kleinrichert, 2008).

Others may take the business or economic approach, involving relationships between CSR programs and financial performance (Godfrey, 2005). Textile is a labor-concentrated industry, which time and again has experienced questions around poor working circumstances, child labor, overtime employment, employee manipulation, low wages, and others (Scott, 2006) as well as the negative environmental effects, such as soil, water, and air pollution while growing and manufacturing fibers, producing and finishing textiles and even during transportation (Borghesi and Vercelli, 2003; De Brito et al., 2008; Hanzl-Wei_, 2004; Myers and Stolton, 1999). Sustainability could be a source of competitive advantage for companies. By creating sustainability a part of companies' core business practices, companies can use such strategies to their competitive advantage in the industry. Thus, companies may need to evaluate their need to contribute to

[5] R&D- Research and Development

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sustainability, integrate sustainability as their core business activities, and build competitive advantages over others.

(Goswami and Brookshire, 2015) Environmental impacts lead to industries implementing or being subject to different standards for environmental protection, levels of environmental spending, environmental sanctions, and stakeholder pressures to which companies in the industries have to respond. The environmental threat of the industry is material to investors due to its financial implications (e.g. implicit environmental liabilities, see, Peters and Romi, 2013) and the probable long-term effects on investment portfolios The objective of the Study: The sustainability of the Bangladesh textile industry previously was only associated with social or environmental or economic aspects. Many studies are there who based the sustainability of the textile industry either on social or environmental or economic performance but there is no study that shows the dependency of the sustainability of the textile industry on the social, environmental, and economic concern simultaneously.

So our objectives are:

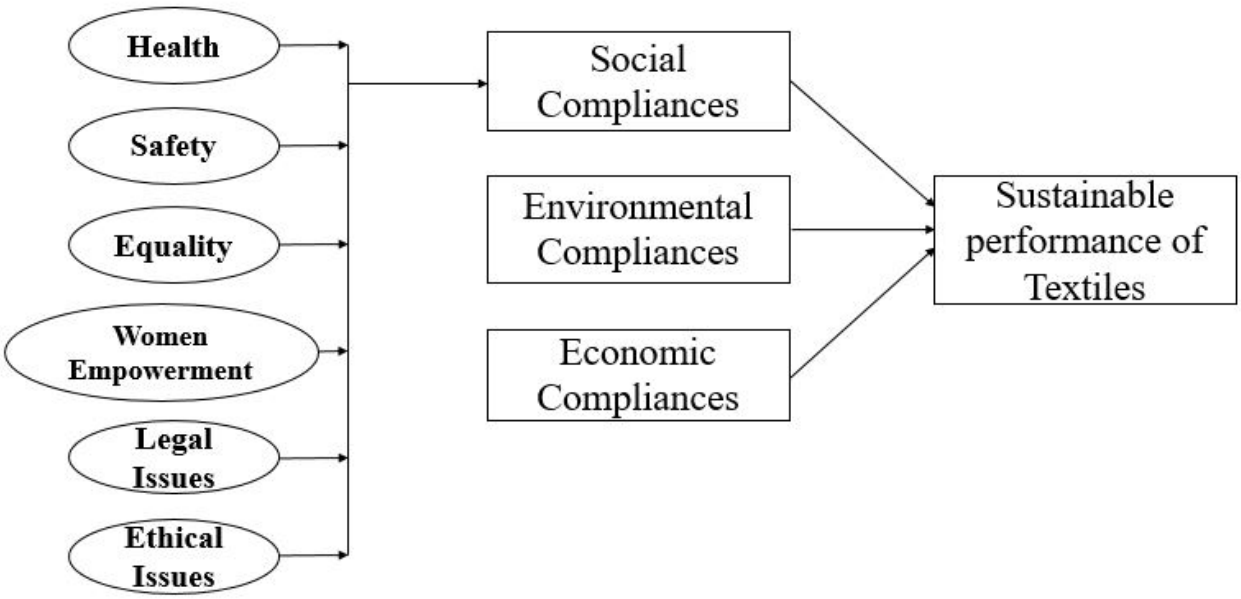
- Seek to identify the factors that variously obstruct and promote sustainability within the textile industry of Bangladesh from the perspective of stakeholders at different levels.
- Enhance the opportunities of training managers employed in the textile industry of Bangladesh or elsewhere.

d) The methodology of the Study

The data collected for this study followed both qualitative and quantitative data collection methods and the questionnaire used to collect the necessary data is semi-structured. The sample size of the data used in this study is 100. The sources of data used in the study are primary and secondary.

Primary sources involved in-depth interviews of the mid-level managers of textile related companies, officials of the regulatory bodies of textile in Bangladesh, and govt. official(s). Secondary sources involved the study of scholarly websites, journals, articles, and research papers. The measurement of data has been detailed for the qualitative part, however, for the quantitative segment, empirical statistical analysis, and descriptive analysis has been conducted using SPSS. Conceptual Framework: / Sustainability of textiles has been considerably dependent on three variables, i.e. – Social Compliances, Environmental compliance, and Economic Compliances. Again, Social Compliances are divided into six sub-variables – Health, Safety, Equality, Empowerment of Women, Legal Practice, and Ethical Practice.

e) Conceptual Framework



The sustainability of textiles has been considerably dependent on three variables, i.e. – Social Compliances, Environmental compliance, and Economic Compliances. Again, Social Compliances are divided into six sub-variables – Health, Safety, Equality, Empowerment of Women, Legal Practice, and Ethical Practice.

f) Research Hypothesis

H1: Social, Environmental, and Economic concerns have a positive impact on the Sustainability of Textiles in Bangladesh.

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IV. Analysis and Findings

a) Mean, Standard Deviation, and Relative Importance of Means' of Variables

Based on the answers of the respondents from the Questionnaire the following table has been generated. The Questionnaire has four parts: social, environmental, economic, and others portion. Each portion has both open-ended and closed-ended questions To determine the relative importance of the mean(s) of all the variables, we have divided it into three categories on a scale of 1 to 5 (1 being the minimum value):

i) Low => 1.00 – 2.33
ii) Medium => 2.34 – 3.67
iii) High => 3.68 – 5.00

Table 1

Variable Type	Variable	Mean	Relative Importance of Mean	Standard Deviation
Independent	Social Concerns	3.88	High	0.51
Independent	Environmental Concerns	3.73	High	0.72
Independent	Economic Concerns	3.61	Medium	0.58
Dependent	Sustainability of Textiles	3.66	Medium	0.58

According to the relative importance of mean, social and environmental concerns are comparatively in a better stage compared to the economic concerns in the textile industry of Bangladesh. However, the difference between the mean of three independent variables are not too high (<0.3), and the mean of them are close to or currently in the medium range according to the relative scale of importance. The dependent variable has been at the edge of the medium and higher level of the relative importance of mean, which depicts the requirement of more attention towards the factors responsible to influence the sustainability of textiles in a positive direction.

Pearson Correlation

Table 2

Correlations					
		Social	Environmental	Economic	Sustainability
Social	Pearson Correlation	1	0.106	0.137	0.519 **
	Significance (2 tailed)		0.294	0.175	0.000
	N	100	100	100	100
Environmental	Pearson Correlation	0.106	1	0.435 **	0.615 **
	Significance (2 tailed)	0.294		0.000	0.000
	N	100	100	100	100
Economic	Pearson Correlation	0.137	0.435 **	1	0.648 **
	Significance (2 tailed)	0.175	0.000		0.000
	N		100	100	100
Sustainability of Textile	Pearson Correlation	0.519 **	0.615 **	0.648 **	1
	Significance (2 tailed)	0.000	0.000	0.000	
	N	100	100	100	100

***Correlation is significant at 0.01 level (2 tailed)*

According to table 2, Social, Environmental, and Economic concerns are highly correlated with the sustainability of textiles at a significance level of 0.01 or 1%.

Reliability Statistics

Table 3

Reliability Statistics	
Cronbach's Alpha	Number of Items (N)
0.726	4

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Cronbach's alpha has been used to check the reliability of the collected data. Cronbach's alpha indicates overall reliability over a variable set. The acceptable standard value of Cronbach's alpha is 0.70 or more. In this study, the value of Cronbach's alpha is 0.726, which depicts a considerable level of internal consistency for the scale of this sample.

Regression Analysis

Table 4

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.854	0.729	0.721	0.30737
a. *Predictors: (Constant), Economic, Social, Environment*				

The coefficient of determination is 0.729. It means that the model fits the data appropriately as the dependent variable is explained by 72.9% or approximately 73% by the independent variables.

Table 5

ANOVA					
Model	Sum of Squares	df	Mean Square	F	Significance
1. Regression	24.450	3	8.150	86.264	0.000
Residual	9.070	96	0.094		
Total	33.520	99			
a. *Dependent Variable: Sustainability of Textiles* b. *Predictors: (Constant), Economic, Social, Environment*					

Table 5 represents that the statistical significance of the regression model is 0.000, which is less than 0.05 for a higher F (=86.264) value. It means that all the independent variables collectively and simultaneously can significantly influence the dependent variable, the sustainability of textiles. Therefore, H_0 is rejected. That means, Social, Environmental, and Economic concerns can have a positive impact on the sustainability of the textile industry in Bangladesh.

Table 6

Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance	Collinearity Statistics	
	β	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-0.910	0.298		-3.056	0.003		
Social	0.483	0.062	0.420	7.823	0.000	0.984	1.016
Environment	0.313	0.048	0.387	6.560	0.000	0.818	1.222
Economic	0.424	0.059	0.422	7.120	0.000	0.814	1.229
a. *Dependent Variable: Sustainability of Textiles*							

From table 6, the following regression equation can be developed.

Regression Equation

Sustainability of Textiles = -0.910 + (0.483×Social Concerns) + (0.313×Environmental Concerns) + (0.424×Economic Concerns)

The value of the β coefficient from the above-mentioned Coefficient table indicates, how many units of dependent variable increases or decreases for a single unit increase in each independent variable. Here, the "1" unit increase in Social Concerns results in a "0.483" unit increase of Sustainability of Textiles. Similarly, a "1" unit increase in Environmental Concerns will increase the Sustainability of Textiles by "0.313" units and Economic Concerns by "0.424" units. Here, Social, Environmental, and Economical concerns all individually have a statistically significant impact on Sustainable textiles as their individual absolute t values are more than 2 (according to the 2-t thumb rule). No multicollinearity in this regression model as the values of VIF for all independent variables fall within the range of 1 to 10.

b) Findings

There are barriers and success of the textile industry of Bangladesh according to different stakeholders' level. They are described below:

c) Barriers

The barriers of the three independent variables, i.e., social, environmental, and economic concerns are as follows:

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Social Concerns: (See appendices 10 and 11)

i) According to the mid-level managers, lack of education and awareness along with ignorance are some of the primary reasons for workers' health conditions in the factories.

Workers are reluctant to use PPE (Personal Protective Equipment) and get wounded or sick from the machines they keep working with. Again, some factories do no provide PPEs to the workers despite engaging them in risky jobs and often do not provide frequent training or monitoring in the working environment.

ii) Payments are often comparatively lower compared to the requirement of a standard lifestyle, which arises a conflict between the workers and managers. As a result, productions are obstructed causing loss to the factory(s).

iii) Male and female are not considered in the managerial positions equally according to most of the managers. According to the managers, the females might not be able to face a conflicting situation between the authority and a few hundred workers and will possibly get in shock. As a result, very few women are seen in managerial posts.

iv) The ethical issues of workers are not too strong despite proper training and motivation. Due to excessive pressures of work, they tend to spend more time than regular during breaks and the works remain incomplete which forces other workers to stay as well till the work gets finished.

v) Ignorance of top-level management over ensuring a healthy working environment, e.g., enough space for every worker, PPEs for workers according to requirements, sufficient leisure hours and proper salaries, etc., is another barrier of the social concern.

Environmental Concern: (See appendices 12 and 13)

i) Effluent Treatment Plants (ETP) is not set and/or not maintained properly by all factories due to the huge expenses it will incur. The profits cannot cover its expenses properly after the payment of the salaries. Due to a lack of working knowledge and funds, ETPs are not frequently used in our country to prevent or lessen water pollution along with the absence of waste recycling initiatives.

ii) A lot of factories use burners to burn their wastes, resulting in frequent air pollution around the factory premises.

iii) Due to the disposal of industrial wastes around the factory premises, the water and soil around the factories get polluted frequently, which results in the death of aquatic animals and lessening soil fertility respectively.

iv) Renewable energy sources are not yet used in maximum factories of Bangladesh, rather they prefer to use gas as their fuel. Renewable energy is too costly to set up in this region and cannot be used properly for a bulk amount of production according to the managers.

Economic Concerns: (See appendices 14 and 15)

i) In almost all factories of Bangladesh, top-level management personnel is hired from India and Sri Lanka due to their vast previous experience in the management of textile factories in their countries.

ii) However, sometimes it becomes a burden for the factories to match with their higher salaries when the factories keep failing to match with the profits.

iii) Due to inflation in the international market(s), raw materials like cotton' prices have increased, which has brought about a decrease in cost-effectiveness.

iv) Buyers seem disinterested in paying for the orders more than before, despite the price increase of supplies in the international market and more conditions being attached regarding compliance issues with regular auditing, which requires a huge cost to maintain. As a result, overall profitability has decreased over the years in the textile industry.

v) Due to a lack of proper negotiations over the prices between the buyers and the factory managers, buyers are finding alternatives, as a result of which, sales growth has been decreasing on an overall basis.

Success Factors

Social Factors

i) Free treatments are being provided in maximum textile factories of Bangladesh, where some of them also have a permanent clinic providing free medicines for the sick, treatment to the wounded except for serious injuries, and sanitary napkins for the female workers inside the factory premises. As a result, the workers are not deprived of healthcare in the factory(s).

ii) Fire extinguishers are reserved on every floor of the factory(s) where the supervisors and workers are trained to escape the premises through the emergency exits during fire or explosion. In some factories, fire extinguisher balls are kept nearby to tackle the emergency (s) immediately during fire accidents.

iii) Females are getting interested in the textile sector since students in textile universities are increasing gradually, and within a few years, females will be seen in the managerial positions of textile companies more often.

iv) Employees are trained over the legal and ethical issues which ensure both workers and authorities a fair system for hiring and firing employees over any incident.

v) Female workers are given paid maternity leaves and in some factories, daycare facilities are existent to keep the female worker's tension free and more

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consistent in their works as well as ensuring a safe environment for the child.

Environmental Factors

i) The use of ETPs has increased in the factory(s) due to pressures from the buyers and auditors frequently, which has lessened the water pollution to some extent.
ii) Waste disposal has decreased compared to before due to advanced technology(s) used for production and the remaining products are either sold as a byproduct or used as fuel in the burners for the production of goods.
iii) Renewable energy sources are used in all the green factories of the country. However, the tendency to use renewable energy and lessening overall production costs as well as pollution in the long term has been started on a small scale over the country.

Economic Factors

i) Sales and Business volumes are currently on a significant level ensuring the constant export of textile goods.
ii) Export has increased by 2.36% overall paralleled to the previous fiscal year (2017-18).

Enhancing the Training of Managers Employed in the Textile Industry:

i) Having extensive training for mid-level managers regarding building the confidence and knowledge to negotiate with buyers
ii) Awareness campaign for workers to the social compliances to ensure their 100% knowledge about workers' rights and requirements of workplace safety.
iii) The involvement of management students in the Textile sector with textile-based practical knowledge can ensure their adaptation into the textile-related jobs with ease.
iv) Universities can play the following roles to enhance the training of managers:

- Motivate students to involve in the textile sector.
- Focus more on textile-based education along with management education.
- Help the textile industries to give eligible students for their managerial post.

V. Recommendations

To enhance the training of managers employed in the textile industry(s) more, the following initiatives are required to be taken:

i) Arranging frequent workshops, training sessions to increase awareness among the employees, and regular visitations in the well-arranged factories if necessary.
ii) Demonstrations of handling a conflicting situation with the workers and buyers to manage them and negotiate with them properly by protecting companies' interests should take place.
iii) Developing awareness to protect the environment and encourage them to take necessary measures for it
iv) Training them to fix the workplace environment lessening the pollution and fulfilling all compliances.
v) Ensuring proper knowledge of the Labor Law and Human Rights Act among the managers to make them aware of the workers' rights before negotiating with them properly.
vi) Proper development of skills to handle buyers and workers to motivate them to buy and work respectively. Training to handle emergencies like fire accidents, earthquakes, etc.

VI. Conclusion

This study focused on the barriers and success factors of the sustainability of the Bangladeshi textile industry from different stakeholders' perspectives which has varied accordingly in the context of social, environmental, and economic concerns.

The findings of this study have suggested the improvisation of different concerns (social, environmental, and economic) will ensure the long term sustainability of this industry as well as making the industry more profitable after some conditions from the stakeholders are fulfilled as well. As according to Rahman (2004), the RMG industry of Bangladesh has been established "with a dominant core-periphery structure of production" which are dictated by external elements where the local entrepreneurs are not in the driving seat, that is, the foreign buyers have been the topmost priority to ensure the proper fuel to this industry with more buy orders.

Due to the lower expenses in Bangladesh compared to most of the countries around the world, the buyers become more interested in purchasing RMG products from this country, however, the condition is not going to be the same in this decade. The increased salaries, labor costs rise, maintaining compliance after a few incidents described in the initial segment of the study have been changing the future of the textile industry of Bangladesh.

All over the world, sustainability has gained huge attention from both the buyers and sellers on a local, national and international basis, the absence of which might cause either party to suffer in the long run. However, the support system of this change of the textile industry in Bangladesh provided by the international buyers has not been the same according to their increasing demand as our findings has suggested so far in this study from the perspective of the managers.

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The managers have to ensure the profit margin with the price they receive which ends with the negligence of the concerns most of the time according to them. For this managers need to develop negotiation skills to attain a price that ensures profit margin. Most of the managers, including the respondent from ILO, has valued the importance of increasing awareness of helping to maintain every concern of social, environmental, and economic, from both buyers and sellers to ensure the profit margin of the industry overall and reach the target of $50 Billion of Bangladesh by 2021 in the textile industry through maintenance of every stakeholders' share, and make the textile industry more sustainable for the betterment of Bangladeshi economy in the long run.

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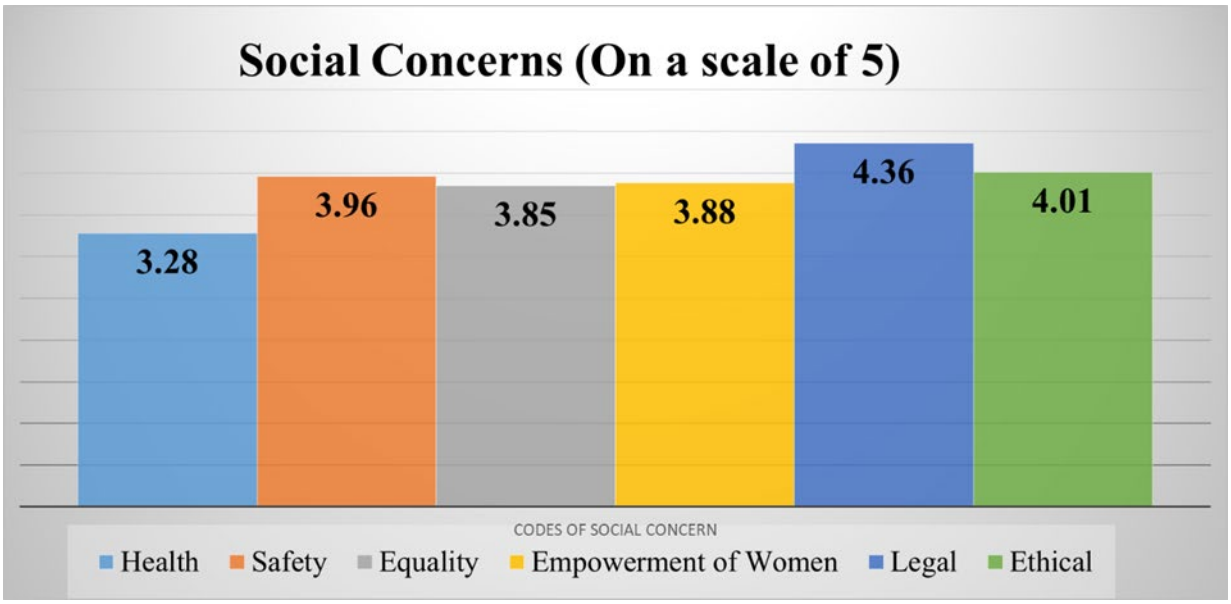
Appendices

Appendix 1

The relative importance of the Means' of Variables (on a scale of 5)

- Low
  - 1.00 - 2.33
- Medium
  - 2.34 - 3.67
- High
  - 3.68 - 5.00

Appendix 2



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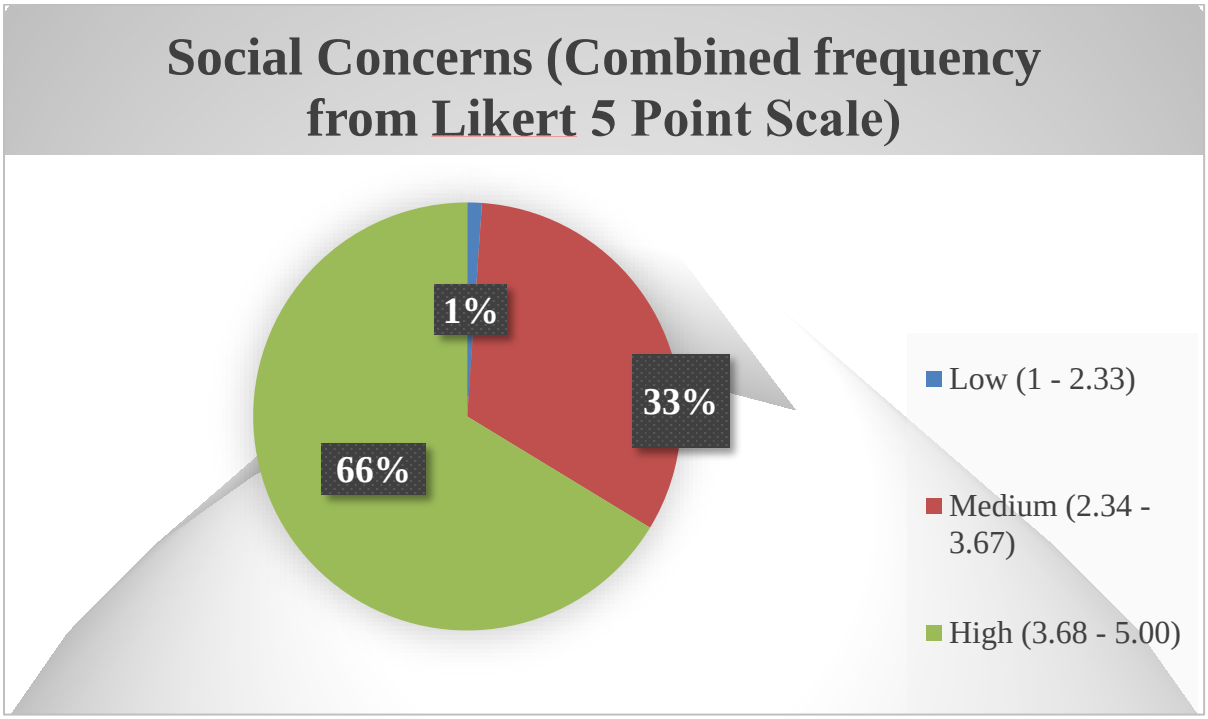
Appendix 3



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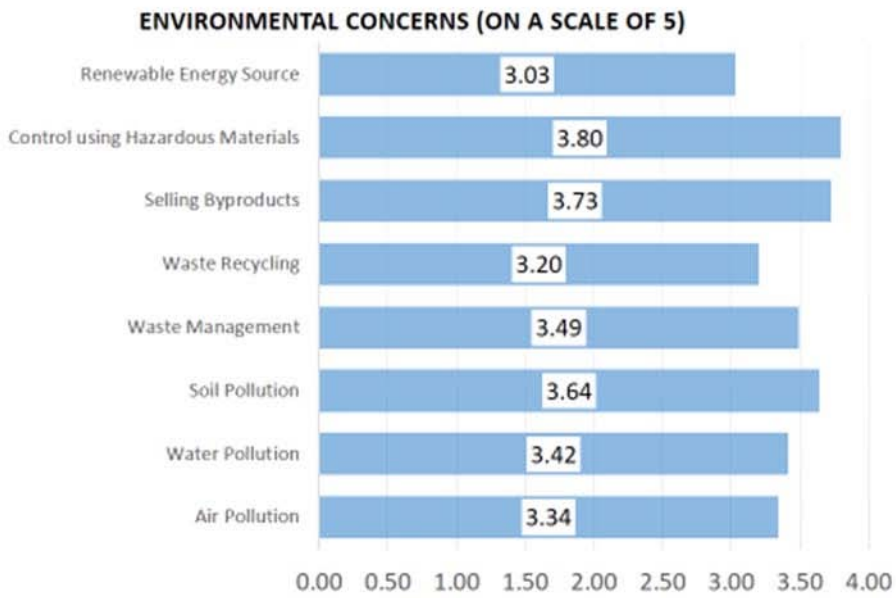

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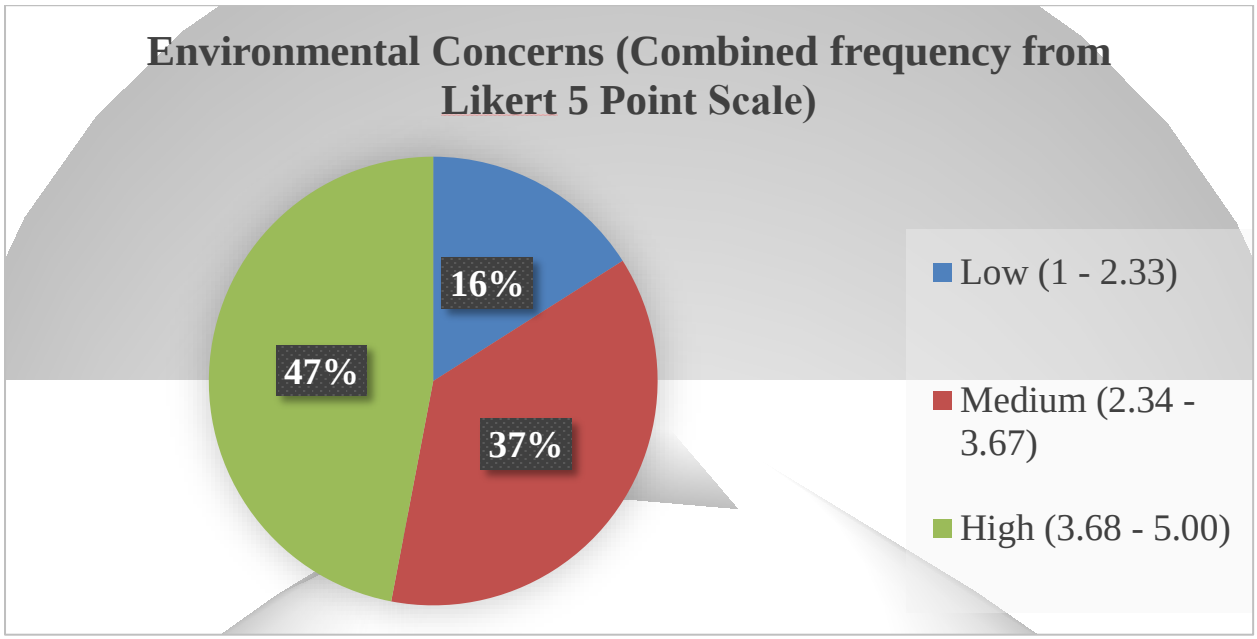
Appendix 5



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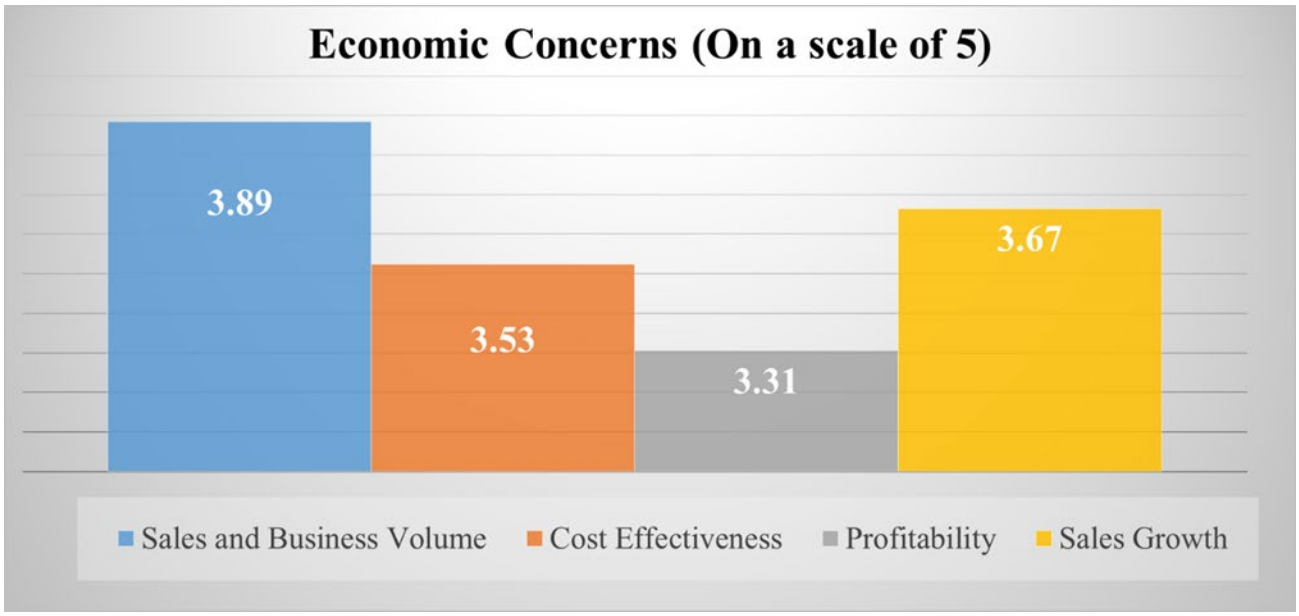

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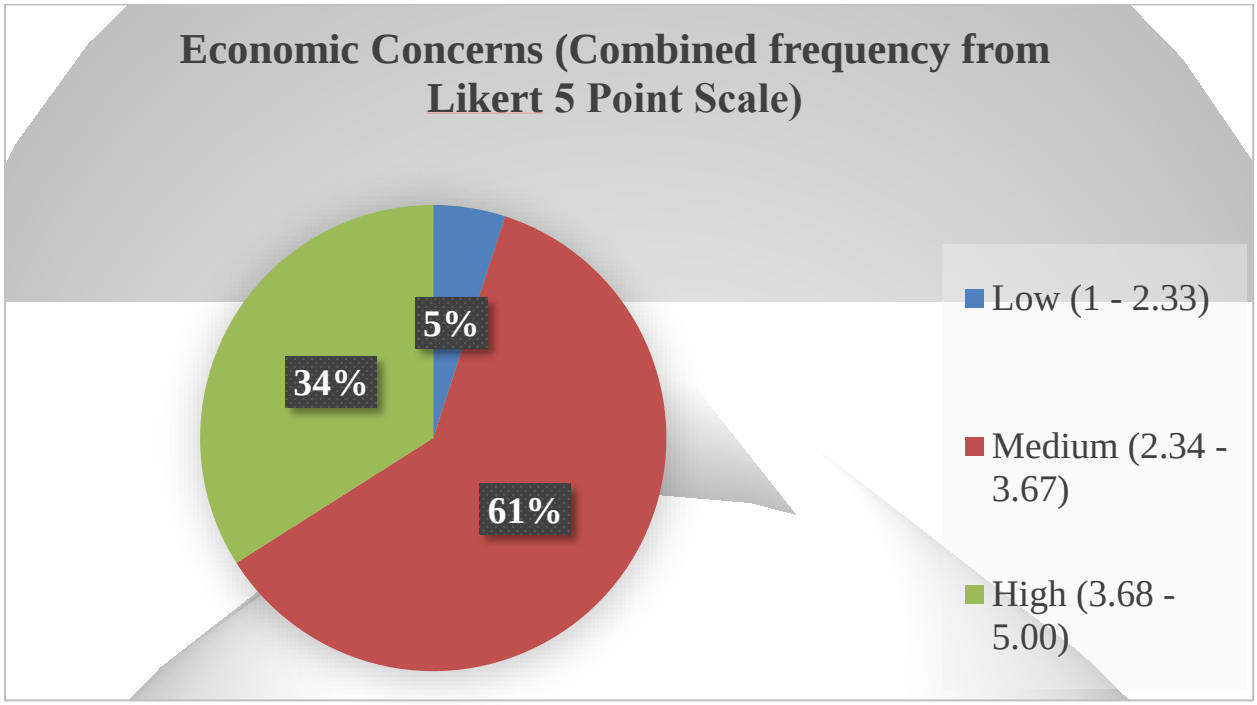
Appendix 7



Appendix 8

Mean of All Concerns Combined (On a scale of 5)		
Social	Environmental	Economic
3.98	3.45	3.59

Appendix 9

Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	Number of Items (N)
0.726	4

Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.854	0.729	0.721	0.30737
a. *Predictors: (Constant), Economic, Social, Environment*				

ANOVA

ANOVA					
Model	Sum of Squares	df	Mean Square	F	Significance
1. Regression	24.450	3	8.150	86.264	0.000
Residual	9.070	96	0.094		
Total	33.520	99			
a. *Dependent Variable: Sustainable performances of Textiles* b. *Predictors: (Constant), Economic, Social, Environment*					

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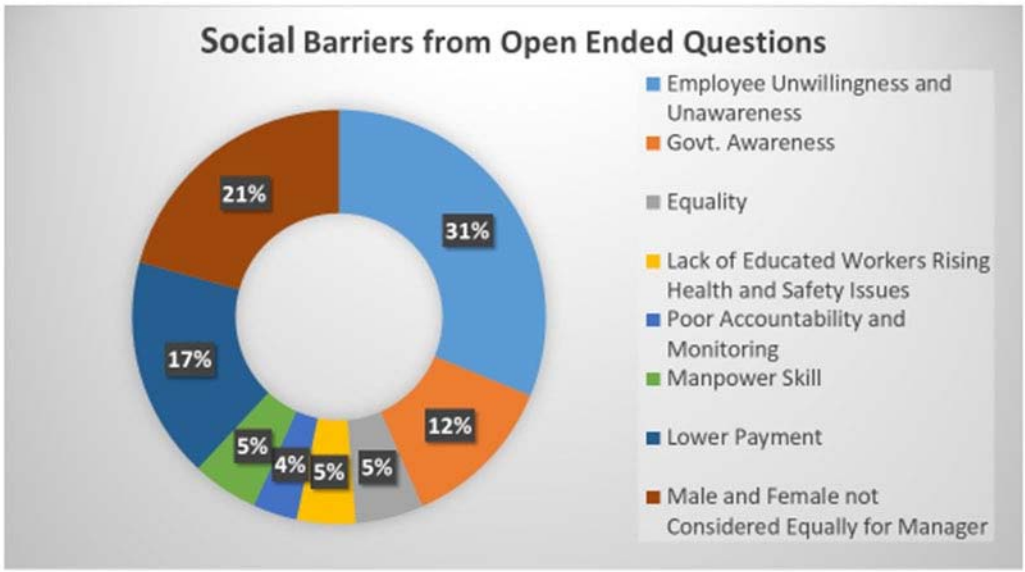
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Significance	Collinearity Statistics	
	β	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-0.910	0.298		- 3.056	0.003		
Social	0.483	0.062	0.420	7.823	0.000	0.984	1.016
Environment	0.313	0.048	0.387	6.560	0.000	0.818	1.222
Economic	0.424	0.059	0.422	7.120	0.000	0.814	1.229
a. *Dependent Variable: Sustainable performances of Textiles*							

Pearson Correlation

Correlations					
		Social	Environmental	Economic	Sustainability
Social	Pearson Correlation	1	0.106	0.137	0.519 **
	Significance (2 tailed)		0.294	0.175	0.000
	N	100	100	100	100
Environmental	Pearson Correlation	0.106	1	0.435 **	0.615 **
	Significance (2 tailed)	0.294		0.000	0.000
	N	100	100	100	100
Economic	Pearson Correlation	0.137	0.435 **	1	0.648 **
	Significance (2 tailed)	0.175	0.000		0.000
	N		100	100	100
Sustainable performance of Textile	Pearson Correlation	0.519 **	0.615 **	0.648 **	1
	Significance (2 tailed)	0.000	0.000	0.000	
	N	100	100	100	100

***Correlation is significant at 0.01 level (2 tailed)*

Appendix 10



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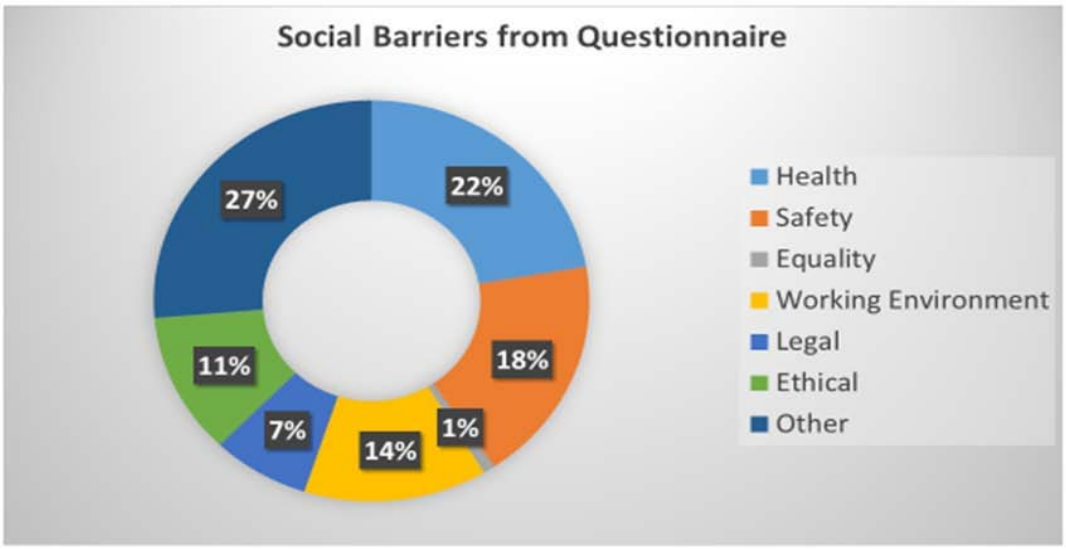
Appendix 11



Social Barriers	No. of Respondents Agreed on	Percentage of Respondents Agreed on
Documentation, Payment and Business License	1	0.45
Employee Unwillingness and Unawareness (Often Results in Less Personal Protective Equipment Use)	4	1.82
Working Environment	30	13.64
Ethical	25	11.36
Grey Area of Law	1	0.45
Trade Union	1	0.45
Legal	16	7.27
Govt. Awareness	2	0.91
Expensive Equipment and Building Construction	1	0.45
Health	49	22.27
Safety	40	18.18

Social Barriers	No. of Respondents Agreed on	Percentage of Respondents Agreed on
New and Old Generation Gaps	1	0.45
None	8	3.64
Illiterate Workers Consuming more Time to Gain Experiences	1	0.45
Worker Turnover	1	0.45
Lower Payment	10	4.55
Male and Female not Considered Equally for Manager	12	5.45
Total		100%

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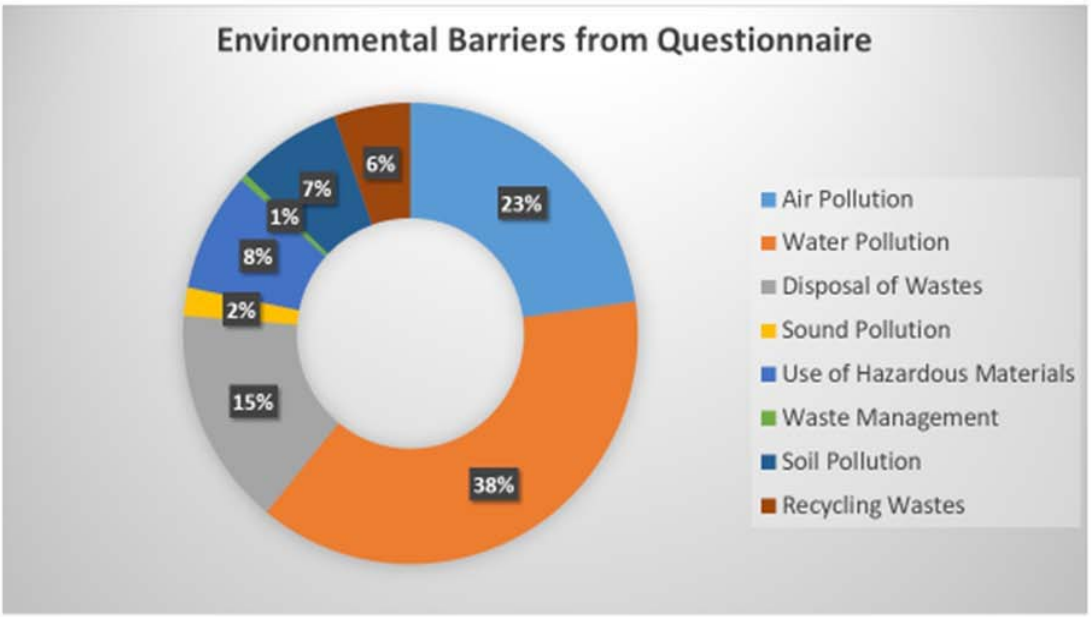
Social Barriers	No. of Respondents Agreed on	Percentage of Respondents Agreed on
Equality	2	0.91
Women Empowerment	1	0.45
Bribing Auditors to save Company	1	0.45
Infant Treatment	1	0.45
Intention to Disobey Rules and Regulations	1	0.45
Lack of Educated Workers Rising Health and Safety Issues	3	1.36
Lack of Employer Perspective Mindset	1	0.45
Poor Accountability and Monitoring	2	0.91
Lack of Owners' Knowledge about Social Compliances	1	0.45
Management System	1	0.45
Manpower Skill	3	1.36

Appendix 12



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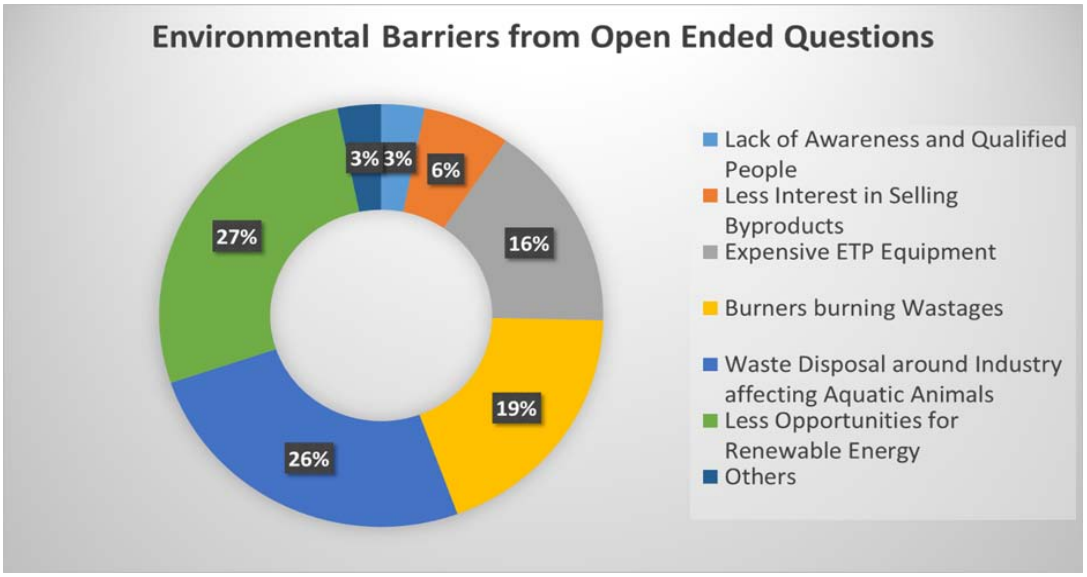
Appendix 13



Environmental Barriers	No. of Respondents Agreed on	Percentage of Respondents Agreed on
Air Pollution	46	16.61
Water Pollution (Along with Washing Chemicals and Dyeing Agents)	77	27.80
Disposal of Wastes	31	11.19
Sound Pollution (Misplaced Generators)	4	1.44
Use of Hazardous Materials	17	6.14
Waste Management	1	0.36
Soil Pollution	15	5.42
Recycling Wastes	11	3.97
All Mentioned in Questionnaire	6	2.17
Awareness Problems	1	0.36
Challenge to Maintain Total Dissolved Solid in Water	1	0.36
None	6	2.17
Slow Work Rate by Govt. Officers of Ministry	1	0.36
Lack of Qualified People to deal with Pollution Problems	1	0.36
Less Interest in Selling Byproducts	4	1.44
Expensive ETP Equipment	10	3.61
Burners burning Wastages	12	4.33
Waste Disposal around Industry affects Aquatic Animals	16	5.78
Less Opportunities for Renewable Energy	17	6.14
Total		100%

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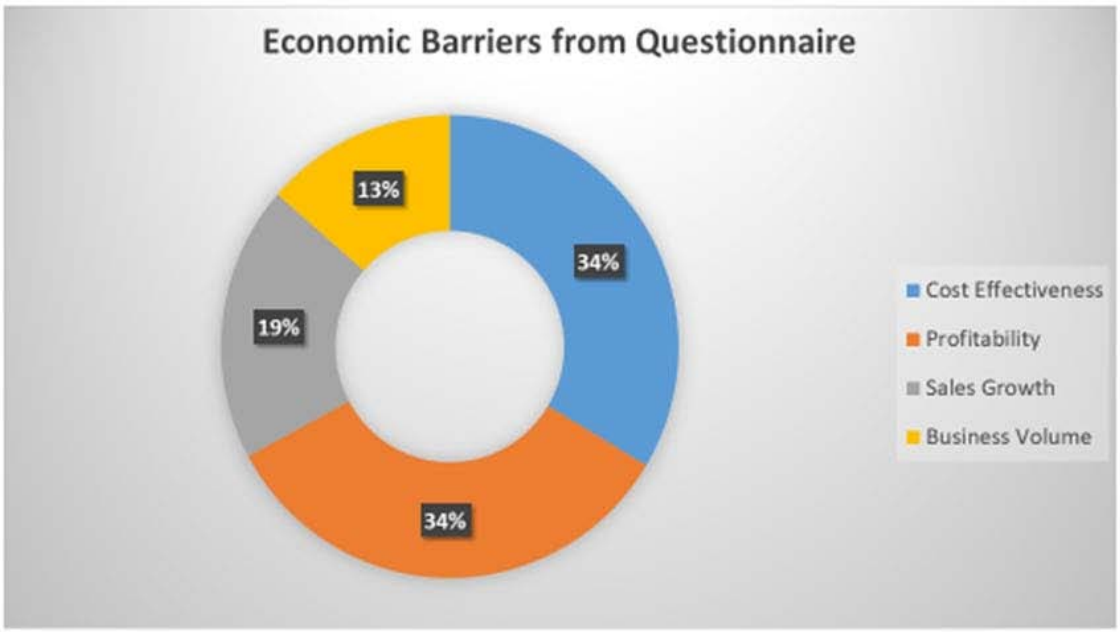
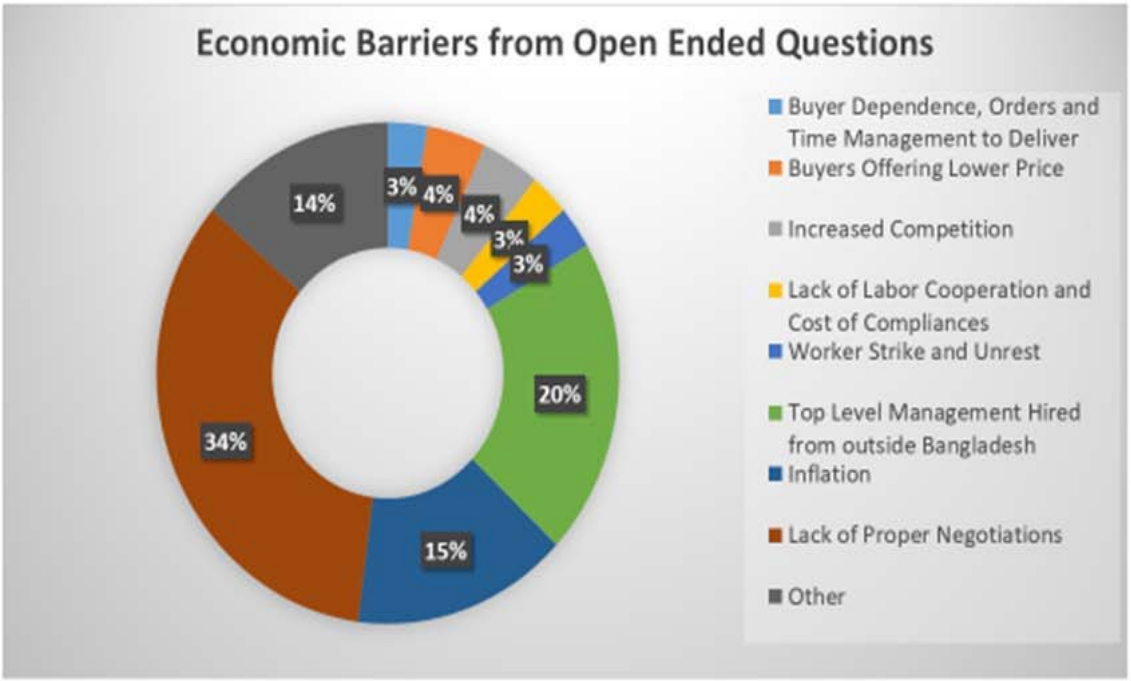
Appendix 14



Appendix 15



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Economic Barriers	No. of Respondents Agreed on	Percentage of Respondents Agreed on
All Mentioned in Questionnaire	2	0.90
Bank Interests	1	0.45
Buyer Dependence, Buyer Orders and Time Management to Deliver	2	0.90
More Time Consumption for Raw Materials	1	0.45
Buyers offering Lower Price	3	1.35
Cost Effectiveness	47	21.08
Profitability	47	21.08
Sales Growth	27	12.11
Increased Competition (Local and Foreign)	3	1.35
Living Cost Increase	1	0.45
Govt. Assistances	1	0.45

Economic Barriers	No of Respondents Agreed on	Percentage of Respondents Agreed on
Lack of Labor Cooperation	1	0.45
None	8	3.59
Business Volume	19	8.52
Cost of Compliances	1	0.45
Lack of Proper Energy Supply Hindering Production	1	0.45
Increasing Salaries and Wages	2	0.90
Worker Strike and Unrest	2	0.90
Relationship between Buyer and Seller lowering Prices	1	0.45
Time Consumption to Satisfy Different Needs of Buyers	1	0.45
Unions focusing on Labor rights only	1	0.45
Top Level Management Hired from outside Bangladesh	15	6.73

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We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

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Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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Tips for writing a good quality Social Science Research Paper

Techniques for writing a good quality homan social science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.



6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.
Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

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Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.



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Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.



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Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

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- Give details of all of your remarks as much as possible, focusing on mechanisms.
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- Recommendations for detailed papers will offer supplementary suggestions.

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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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