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Realities of IDPs Camps

Determinants of Traffic Fatalities

Highlights

Injuries in Wolaita Zone

Male Involvement in Family Planning

Discovering Thoughts, Inventing Future

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Assessment of Male Involvement in Family Planning use in Loka Abaya District, Southern Ethiopia: Cross-Sectional Study

By Berhanu Bifato
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Abstract- *Background:* Involving men and obtaining their support and commitment to family planning is of crucial for family planning service utilization. But the information available on male involvement in family planning use is limited in study area.

Objective: To assess male involvement in family planning use and associated factors in Loka Abaya woreda sidama zone, Ethiopia.

Method: A community based cross sectional study was conducted in Loka Abaya district, from Sep 2014 to June in 2015. Systematic random sampling was used to select the study subjects. Married men were interviewed to assess the status of male's involvement status in family planning method utilization; by using semi-structured interviews. Finally, data was coded, cleaned, entered using EPI-info7 software and analyzed using SPSS version 20.

Keywords: *male involvement, method approval, spousal communication, contraceptive use.*

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Assessment of Male Involvement in Family Planning use in Loka Abaya District, Southern Ethiopia: Cross-Sectional Study

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Abstract- Background: Involving men and obtaining their support and commitment to family planning is of crucial for family planning service utilization. But the information available on male involvement in family planning use is limited in study area.

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Results: Only 105(16.6%) of participants reported current use of male contraceptive methods and of those reported current use, 50(7.9%) used condom, 28(4.4%) periodic abstinence, 25(3.9%) withdrawal and 2(0.3%) used vasectomy/male sterilization. Four hundred fifty five (71.8%) of their wives were using contraceptive methods during the study period. Half, 323(50.9%) of their wives were using injectable, 83(13.1%) were using implants and, 35(5.5%) of them were using oral contraceptive pills.

Our study showed that those married men and their partners with whom they had discussion about family planning methods were 2.04 and 3.6 times more likely to use contraceptive methods compared to their counterpart. It was found that those partners who had no children and those had 1-2 children were 75% and 59% were less likely to use contraceptive methods by their wives when compared with those had more than five children but no significant association found in male methods.

Conclusion: The study has shown that total number of children mainly to their wives method use, spousal communication to both model and method approval by husband to their partner are important predictive variables for the use of contraception.

Keywords: male involvement, method approval, spousal communication, contraceptive use.

I. Background

High population growth prevents the long-term socio-economic development needed to alleviate poverty and to meet the immediate basic needs of the burgeoning population (8). One of the most serious problems developing countries still have to solve is their rapid and uncontrolled increase in population (9). Sub-Saharan Africa has an average TFR of 5.1, the highest average in the world; which is twice that of South Asia (2.8) (11). The average CPR of 22% is half of South Asia (53%) due to low acceptance and high cultural resistance to FP. Consequently, the maternal mortality ratio of 500/100,000 live births is high and most SSA countries are not on track to achieve MDG5 (10). According to mini Ethiopian DHS 2014 report, the current population size reach as high as 94 million by 4.2 and 42% fertility and contraceptive prevalence rate respectively, and these resulted over all high MMR 420 /100,000 live births (2).

Family planning services have become the interventions of choice to slow population growth. It is believed that child spacing or the timing of every birth can improve survival of the child and can maintain good physical and emotional health for the whole family. Fertility and family planning researches and programs have ignored men's roles in the past, focusing on women (3), despite recent studies have showed that men want to know more about reproductive health and want to support their partner more actively (4). An important step in improving women's reproductive health is the involvement of men (5). Worldwide, none of "male methods (condom or Vasectomy)" accounts for more than 7% of contraceptive use, although uptake varies considerably between countries (6).

Male involvement in family planning means more than increasing the number of men using condoms and having vasectomies; it also includes the number of men who encourage and support their partner and their peers to use FP and who influence the policy environment to be more conducive to developing male-related programs. In this context "male involvement" should be understood in a much broader sense than male contraception, and should refer to all organizational activities aimed at men as a discrete group which have the objective of increasing the acceptability and prevalence of family-planning practice of' either sex (6, 17).

Methods that require male involvement such as condoms, periodic abstinence, withdrawal and vasectomy are used less often (7).

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The involvement of men in family planning would therefore not only ease the responsibility borne by women in terms of decision-making for family-planning matters, but would also accelerate the understanding and practice of family planning in general.

Accordingly, the purpose of the current study is to assess the status of male involvement in family planning use in Loka Abaya district, Southern Ethipia.

II. Methods

a) Study setting

The study was carried out in Loka Abaya, one of the districts of Sidama zone, southern of Ethiopia. According to the 2014 woreda health office estimation the district has the population of 124711(20). The livelihood of the population is reliant on subsistent mixed farming. Major crops grown in the district are maize, teff and enset. Administratively, Loka Abaya is organized in 26 kebeles. A kebele is the smallest administrative unit in Ethiopia with an approximate 1,000 households.

b) Study design

A community based cross-sectional study design employing quantitative methods was used.

c) Sample Size

The study was designed to include 634 participants. The sample size was estimated using single and double population proportion formula with the following specification: 95% confidence level (z $\alpha/2 = 1.96$), power of test 80%, proportion of 60.3% (15) and 51% (16) spousal communication and any contraceptive method use by respondents wives respectively, 5% margin of error (d), design effect of 1.5 and 10% contingency to account for possible non-response.

d) Sampling procedure

Loka Abaya woreda was selected purposefully to assess the status of male involvement in family planning in the woreda. Multistage sampling was used. After free listing, papers bearing the names of the kebeles were put in a basket and by simple random sampling without replacement; ten kebeles were selected by the principal investigator. Household family folder was used as sampling frame for the selection of the study unit. The number of study unit would allocate for each selected kebele by a probability proportional to size allocation. Then to obtain 634 study subjects systematic sampling techniques was used until the required sample sizes achieved.

The sampling interval was calculated by dividing the total number of households in each kebeles to sample size required in each kebeles. The direction where the pencil pointed and every selected household were included in the study.

e) Data collection

To interview married men in the community, semi-structured questioners developed in local language were used. The 5% questionnaires were pre-tested in out of the study site. After pre-test, modification was made for unclear and difficult question based on standard tools adapted from different literatures. During data collection the data was checked for completeness and consistency of information by the principal investigator.

f) Data analysis

Each completed questionnaire was assigned a unique code. The data entry was made by using Epi-info 7 software and data were analyzed using Statistical Package for Social Science (SPSS) for windows (version 20). Statistical significance was considered at $P<0.05$. Possible confounders were controlled by multivariate analysis using logistic regression model. Variables with $P<0.25$ on bivariate analysis were selected as candidates for multivariate analysis and Hosmer and Lemeshow test was used to assess model fitness. To show the strength of association OR with 95% CI was reported.

g) Ethical consideration

Ethical clearance was obtained from Hawassa University College of Medicine and Health Sciences Institutional Review Board. Data were collected after taking informed consent from the study subjects. The participant's privacy, confidentiality and cultural norms were respected properly.

III. Result

a) Socio-demographic characteristics

All 634 married men invited for participation in this study have participated. Its response rate is 100%. The age range for the respondents was from 19 years to 58 years and the mean age of respondents was 33.76 +/- 8.4. Protestant (589, 92.3%) were the major religious group in study area. Two hundred eighty (44.2%) of the study population was unable to read and write. Only one hundred thirteen (17.8%) were educated to the level of high school or above. Farmers comprised the majority (521, 82.2%), followed by merchants (75, 11.8%). A few (12, 1.9%) of the respondents earned less than 1200 birr per annum. Three hundred thirty three, 52.5% were married at ages less than 20 years. The mean age at marriage was 21.21 years. The mean and standard deviation of children ever born was 3.35 and 2.18 respectively. The average family size reported was 6.5(range: 2-11). Nearly 368(58%) reported family size of less than or equal to five (See table 1).

b) Male involvement in family planning method use

One hundred forty, 22.08% of study participants reported ever use of male methods. Of those reported ever use, 70(11.04%) used condom, 32(5.04%) used

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periodic abstinence and 38(6.0%) used withdrawal. Only 105(16.6%) of participants reported current use of contraceptive methods and of those reported current use, 50(7.9) used Condom, 28(4.4%) periodic abstinence, 25(3.9%) withdrawal and 2(0.3%) used vasectomy/male sterilization.

The reason for discontinuation of contraceptive use by 58(9.1%) of men was partners opposition, 22(3.5%) desire more children, 7(1.1%) perceived fear of side effects and others discontinued because of different personal reasons.

Men were asked about current contraceptive use by their wives. Four hundred fifty five (71.8%) of their partner were using contraceptive methods during the study period. More than half, 323(50.9%) of respondents wives were using injectable, 83(13.1%) were using implants, 35(5.5%) of them were using oral contraceptive pills, 6(1.0%) IUCD, 3(0.5%) tubal ligation/female sterilization and the rest use other non-modern methods. The most important reason for using contraceptive methods for 62.6% of the respondents was the need of spacing (See Table 2).

c) *Factors affecting family planning method use by married men and their partner*

The analysis of variables that logically could affect male methods use such as; age of respondents, educational status, annual income, family size, respondents belief about male involvement on family planning importance, respondents religious status about family planning methods, the support of their society about family planning use, type of methods they use were showed significant association with $P<0.05$ during bivariate analysis and selected for multivariate analysis to control confounders. Similarly, variables with $P<0.25$ like; highest grade completed, source of information, and do you think that family planning is important were selected for multivariate analysis. Variables such as Religious status, occupation and age at first marriage were not selected for multivariate analysis because significance test showed $P>0.25$.

Age of respondents from 15-24 and 25-34 showed significant association with (COR= 3.64, 95% CI = 1.41- 9.42) and (COR = 3.02, 95%CI = 1.33- 6.87) respectively but did not showed significant association by multivariate analysis with (AOR = 0.88, 95% CI=0.24-3.22) and (AOR = 0.86, 95% CI = 0.29-2.54) respectively. The analysis of the education of married men showed that those who had no education were 5% less likely (AOR =0.95, 95% CI =0.14-0.99) used contraceptive methods than those had learnt above twelve. Before controlling for possible confounder's the total number of living children was showed significant association by bivariate analysis. Those respondents had no children, those who had 1-2 children and 3-4 were 6.1, 3.4 and 2.25 more likely to have used contraceptive methods when compared to those had more than five children ((COR = 6.1, 95% CI = 2.28-16.18), (COR = 3.4, 95% CI = 1.81-6.56) &(COR = 2.25, 95% CI = 1.14-4.44)) respectively but not by multivariate analysis.

Family size showed significant association in both by bivariate (COR = 2.68, 95%CI = 1.65-4.33) and multivariate analysis (AOR = 0.53, 95% CI = 0.24-0.97) with those family size less than five were 47% less likely used male contraceptive methods than those family size more than five. Regarding annual income of the family, those who had 1200-3600 were more likely used contraceptive methods by bivariate analysis (COR =0.47, 95% CI = (0.24-0.91) but was not found significant association by multivariate analysis (AOR= 0.57, 95% CI = 0.28-1.17) (See table 3a).

Here also variables which logically could affect contraceptive current use by their partner were analyzed by logistic regression and those variables showed significant association in bivariate analysis with $P<0.05$ were carried out to multivariate analysis. Similarly variables with $P<0.25$ were selected as candidate for multivariate analysis and finally variables with $P<0.05$ by multivariate analysis were reported.

Those wives whose husbands are within age group from 15-24 years were 2.4 times more likely used contraceptive methods than age group >44 years (AOR=2.4, 95% CI = 0.69- 8.45) but the association found is not significant. Similarly, the analysis of education of husband toward contraceptive methods use by their wives in both bivariate analysis (COR = 1.41, 95% CI = 0.99-1.99) and multivariate analysis (AOR=0.99, 95% CI = 0.57-1.72) were not showed significant association.

The total number of living children affected contraceptive current use by their wives. Those couples who had no children and who had 1-2 children were 75% and 59% less likely uses contraceptive methods when compared with those had more than five children (AOR = .25, 95% CI = 0.09-0.77) and (AOR = 0.41, 95% CI = 0.06-0.88) respectively. Also, the analysis of annual income showed significant association when adjusted for different variables. Those family who had <1200 were 77% less likely to use contraceptive methods than who had above 7200 Birr ((AOR = 0.23, 95% CI = 0.06-0.90).

Those wives who had discussion with husband about family planning methods were 3.6 times more likely used contraceptive methods compared to their counterpart. It was found to be a predictor of higher contraceptive use with a multivariate analysis incorporating variables like husband support about family planning and husbands perceived approval of contraceptive methods (AOR=3.6, 95 % CI = 1.81-7.18) and wives with those husbands who reported approval of contraceptive use were more user of contraceptive than wives with those husbands who reported non approval (AOR = 13.7, 95% CI = 2.19-86.41). Those

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heard from multiple source had 1.8 times (AOR = 1.8, 95% CI =1.09-3.08) used contraceptive methods than those heard from one source. And also, those wives with husband who believe male involvement is important in family planning use were 5.1 more likely used contraceptive methods than their counterparts (AOR = 5.1, 95% CI = 1.22—8.69). Spousal communication was found as significant predictor of contraceptive current use by married men. Both bivariate and multivariate analysis showed significant association. Those husband who discuss about family planning methods were 2.04 times more likely (AOR =2.04, 95% CI = 1.22 -3.43) use family planning methods than counterpart. Similarly, those husband who believe male involvement on family planning is important were 2.8 times more likely (AOR = 2.8, 95% CI = 1.89-6.90) used family planning methods than their counterparts. On the other hand though the respondents belief about the importance of family planning method use and their societies support status about contraceptive method use showed significant association by bivariate analysis (COR= 5.1, 95% = 1.57-16.52) & (COR = 2.09, 95% CI =1.32-3.32) the multivariate analysis was not showed significant association with (AOR = 1.04, 95% CI =0.66-1.65) & (AOR =1.29, 95% CI =0.58-2.86) respectively(See table 3b).

IV. Discussion

Involving men and obtaining their support and commitment to family planning is of crucial for family planning service utilization. The objective of the study presented in this paper was to assess the involvement of men in family planning method utilization in Loka Abaya woreda. Only 16.5% of married men were currently used male contraceptive methods. It shows male methods were practiced poorly in study area. Spousal communication and method approval were found an important predictor of contraceptive current use and we have illustrated the importance of male involvement in utilization of contraceptive methods in general.

A study conducted in wolaita sodo town also showed that less than 5% of males had used male methods (14). Similarly, about 10% of Kenyan married couples are using a method that requires male participation, such as condom, vasectomy (17). Our study showed that 16.5% of respondents reported male contraceptive current use which is higher than findings observed above. This little higher proportion could be due to time variation and increased male involvement in methods utilization. There are variations in the type of contraceptive methods that are practiced in the study area. Male methods such as vasectomy, condom, periodic abstinence and withdrawal were utilized poorly, accounting for 2(0.3%), 50(7.9%), 28(4.4%) and 25 (3.9%) respectively. These results are higher than EDHS 2011 result which was 0.2% and 0.3% used condom and withdrawal respectively but in line with the studies conducted in Hossaina town, which was 7% used condom respectively (1, 12). Nevertheless there is progress in male involvement on family planning method utilization; the study demonstrated lower practice on contraceptive methods that could be used by men. This underlines the need to increase male involvement on various male contraceptive methods so that they could practice more. Desire to have another child, their wife opposition, the participant perception, fear of side effects, and religious prohibition were among the reasons reported for low utilization of male contraceptive methods.

Male involvement is not limited to the use of family planning methods by itself. It refers rather to the supportive attitude that males have towards their wives in using family planning and motivation in sharing responsibility in reproductive health matters (16).

The findings of this study showed that 455(71.8%) of respondents partner were using contraceptive methods currently. This is higher than the studies conducted in Hossaina town (12), Wolaita sodo town (14), and south eastern Tigray (16). This might be due to an increased awareness and knowledge of the community about contraception, increased access to family planning services through fully functioning health extension program, and/ or increased involvement of NGOs in the advocacy and provision of family planning service in the district.

Regarding the factors affecting male involvement on family planning use the results of this analysis demonstrate that annual income, total number of alive children, source of information, husband's belief about male involvement importance on FP methods use, method approval by husband and spousal communication are significantly associated with current use mainly to their wives contraceptive use.

The analysis of the education of married men showed that those who had no education were 5% less likely (AOR =0.95, 95% CI =0.14-0.99) used male contraceptive methods than those had learnt above twelve. But, the analysis of education to their wives method use was not showed significant association. This could be attributed to the difference in focus given mainly to female methods than male methods by concerned body.

The study conducted in Hossana town also showed men with 3 or fever living children were less likely to practice family planning methods than those with 4 or more children (OR = 0.6, 95% CI 0.5-0.9) (12). Another study in western Ethiopia revealed that family size of five and above and at least three live children are positively associated with current contraceptive use by women ((OR=1.8, 95% CI = 1.03- 3.14) and OR= 2.8, 95% CI = 1.47- 4.15) respectively (13). In consistent with this, our study also showed that those married men with

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family size less than five were 47% (AOR = 0.53, 95% CI = 0.24-0.97) less likely used male contraceptive methods than those family size more than five and those partners who had no children and 1-2 were 75% and 59% less likely used contraceptive methods by their wives when compared with those had more than five children (AOR = .25, 95% CI = 0.09-0.77) and (AOR = 0.41, 95% CI = 0.06-0.88) respectively. Possible explanations for this could be that those with larger families could have achieved the number of children they wanted to have, which implies that they use methods to limit further child birth.

Individuals who have adequate information about the available methods of contraception are better able to make choices about planning their families (1). In a study carried out in Angolela tera district, about 77.4% of the study participants reported that they had heard of family planning methods (15). Most of the respondents 95.1% in our study had information about family planning which is higher than above finding but lower than in EDHS 2011(1). About 49.8% of the respondents heard from more than one sources. Our study also showed that those heard from multiple source were 1.8 times (AOR = 1.8, 95% CI =1.09-3.08) used contraceptive methods than those heard from one source.

Spousal communication helps couples to be aware of each other's perspective about family size and composition so that consensus can take place about contraceptive use. Findings in a rural community of western Ethiopia (13), Angolela Tera District (15), and south eastern zone of Tigray and in North Gondar have showed that (18) those who communicate with their wives were more predisposed towards use of contraception.

A study done in Hossaina town showed that men who had discussions with their wives about family planning matters (AOR = 17.3, 95% CI, 11-27) and who approved of the use of contraceptives (AOR = 14, 95% CI, 6-33) were more likely to practice family planning methods (12).

Another study done in Wolaita Sodo town also showed that men who had discussions with their wives about family planning matters 4.09 times to practice family planning method than men who had no discussion ((AOR 4.091 95% CI 2.273-7.364) P<0.05). Also, approval of men in contraceptive use was highly associated with current use of contraceptive use adjusted odds ratio 16.5 CI (7.69-35.77) p<0.001 (14). Another study conducted in Jimma about influence of women's autonomy on couples contraception use indicated that couples who openly discuss about family planning is higher in use of contraception than in those who didn't communicate. Similarly couples current contraception use was higher when the husband approves the family planning than in cases when doesn't approve (19). In agreement with the above findings our also showed that those married men and their partner who had discussion with about family planning methods were 2.04 and 3.6 times more likely used contraceptive methods compared to their counterpart with ((AOR = 2.04, 95% CI = 1.22 -3.43) and (AOR = 3.6(1.81-7.18)) respectively. Husbands perceived approval of contraceptive methods also found important predictor of higher contraceptive use (AOR = 13.7, 95% CI = 2.19-86.41) but, in contrary to the study in rural western Ethiopia that women with those husbands who reported approval of contraceptive use were less user of contraceptive than women with those husband who reported not approval (13).

V. Conclusion

The analysis of this study provided information on male involvement status in family planning method use in Loka Abaya woreda. Only105 (16.6%) of participants, reported current use of contraceptive methods. Our results demonstrated that family sizes, husband's belief about male involvement importance on family planning, spousal communication are important predictive variables for the use of male contraceptive methods.

Four hundred fifty five (71.8%) of their partner were using contraceptive methods during the study period. Injection (50.9%) and Implants (13.1%) are mainly used methods followed by pills (5.5%). A family size and total number of children they have also matters method utilization. It was found that those married men with family size less than five were 47% less likely used male contraceptive methods than those family size more than five and those partners who had no children and 1-2 were 75% and 59% less likely used contraceptive (P<0.05) methods by their wives when compared with those had more than five children respectively.

Regarding Spousal communication, 392 (61.8%) of the respondents reported that they had ever discussed family planning with their wives. It was found to be a predictor of higher contraceptive use with 3.6 times more likely used contraceptive methods compared to their counterpart. Also, husbands perceived approval found an important predictor of higher contraceptive use. Our results demonstrated that family size, total living children, source of information, husband's belief about male involvement importance on family planning, spousal communication and method approval by husband are important predictive variables for the use of their wives contraceptive methods.

Competing interests

The authors declare that they have no conflict of interest.

VI. Acknowledgements

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Tables and Figures

Table 1: Socio-demographic characteristics of married men in Loka Abaya woreda, Sidama zone-SNNPRS 2014/15

Variable(n=634)		Frequency (%)
Age	15-24	70 (11.0%)
	25-34	289 (45.6%)
	35-44	182 (28.7%)
	>44	93 (14.7%)
Religion	Protestant	589 (92.9%)
	Orthodox	0 (0%)
	Muslim	10 (1.6%)
	Other	35 (5.5%)
Educational status	No formal education	280 (44.2%)
	1-4	31 (4.9%)
	5-8	210 (33.1%)
	9-12	88 (13.9%)
	>12	25 (3.9%)
Occupation	Farmer	521(82.2%)
	Merchant	75 (11.8%)
	Government employ	29 (4.6%)
	Other	9 (1.4%)
Family size	<=5	368 (58%)
	>5	266 (42%)
Annual income of the family	<1200	12(1.9%)
	1200-3600	118(18.6%)
	3600-7200	243(38.3%)
	>7200	261(41.2%)

Table 2: Practices of contraceptive methods by married men and their partner in Loka Abaya woreda, Sidama zone-SNNPRS 2014/15

Variables(n=634)		By married men		By his partner	
		Frequency	%	Frequency	%
Ever use of CM	Yes	140	22.08		
	No	494	77.92	NA	
Current use of CM	Yes	105	16.6	455	71.8
	No	529	83.4	147	23.2
	Don't know			21	3.3
	Not sure	NA		11	1.7
Mainly used CM	Male condom	50	7.9		
	Periodic abstinence	28	4.4		
	Vasectomy	2	0.3	NA	
	Withdrawal	25	3.9		
	Injection			323	50.9
	Implants(Implanon and other)			83	13.1
	Pills	NA		35	5.5
	IUCD			6	1.0
	Tubal ligation/Female sterilization			3	0.5
	Prolonged breast feeding			5	0.8

- NA- Not Available

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Table 3a: Independent predictors of male involvement on family planning method use versus contraceptive current use by married men in Loka Abaya woreda, Ethiopia-2014/15

Variables(n=634)	Current use of contraceptive methods by men		COR(95%CI)	AOR(95%CI)
	Yes (%)	No (%)		
Age of respondents				
15-24	16(22.9%)	54(77.1%)	3.64(1.41-9.42)*	0.88(0.24-3.22)
25-34	57(19.7%)	232(80.3%)	3.02(1.33-6.87)*	0.86(0.29-2.54)
35-44	25(13.7%)	157(86.3%)	1.96(0.81-4.71)	1.07(0.41-2.78)
>44	7(7.5%)	86(92.5%)	1	1
Educational status				
No formal education	35(12.5%)	245(87.5%)	0.3(0.12-0.76)	0.95(0.14-0.99)*
1-4	5(16.5%)	26(83.5%)	0.41(0.11-1.46)	1.48(0.56-3.97)
5-8	13(17.6%)	173(82.4%)	0.45(0.18-1.13)	1.31(0.47-3.67)
9-12	20(22.7%)	68(77.3%)	0.63(0.24-1.66)	1.89(0.86-4.19)
>12	8(32.0%)	17(68.0%)	1	1
Total living children				
No children	9(33.3%)	18(66.7%)	6.1(2.28-16.18)*	3.15(0.76-13.01)
1-2	51(22.1%)	180(77.9%)	3.4 (1.81-6.56)*	1.81(0.61-5.42)
3-4	32(15.6%)	173(84.4%)	2.25(1.14-4.44)*	1.6(0.67-3.76)
>=5	13(7.6%)	158(92.4%)	1	1
Family size				
<=5	80(21.7%)	288(78.3%)	2.68(1.65-4.33)	0.53(0.24-0.97)*
>5	25(9.4%)	241(90.6%)	1	1
Annual income				
<1200	1(8.3%)	11(91.7%)	0.37(0.05-2.97)	0.29(0.04-2.42)
1200-3600	12(10.2%)	106(89.8%)	0.47(0.24-0.91)	0.57(0.28-1.17)
3600-7200	41(16.9%)	202(83.1%)	0.84(0.53-1.32)	0.94(0.57-1.54)
>7200	51(19.5%)	210(80.5%)	1	1

➢ = p<0.05

Table 3b: Independent predictors of male involvement on family planning method use versus contraceptive current use by married men in Loka Abaya woreda, Ethiopia-2014/15

Variables(n=634)	Current use of CM by married men		COR(95% CI)	AOR(95%CI)
	Yes	No		
Have you ever heard about FP method use				
Yes	104(17.2%)	499(82.8%)	6.25(0.84-46.36)	2.25(0.25-19.89)
No	1(3.2%)	30(96.8%)	1	1
Heard from				
Multiple source	46(14.5%)	272(85.5%)	0.74(0.48-1.12)	1.89(0.86-4.19)
One source	59(18.7%)	257(81.3%)	1	1
Do you think that FP is important				
Yes	102(18.1%)	460(81.8%)	5.1(1.57-16.52)**	1.04(0.66-1.65)
No	3(4.2%)	69(85.8%)	1	1
Do you belief male involvement on FP is important				
Yes	99(18.6%)	434(81.4%)	3.6(1.54-8.47)**	2.8(1.89-6.90)*
No	6(5.9%)	95(94.1%)	1	1
Do you think your religion is against the use of FP methods				
Yes	1(7.7%)	12(92.3%)	1.97(0.98-3.98)	0.77(0.18-3.33)
No	104(16.7%)	517(83.3%)	1	1

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Does the society you live support the use of FP				
Yes	100(18.7%)	434(81.3%)	4.4(1.74-11.04)*	1.29(0.58-2.86)
Not sure	5(5.0%)	95(95.0%)	1	1
Had discussion about family planning methods				
Yes	82(20.9%)	310(79.1%)	2.52(1.54-4.13)*	2.04(1.22 -3.43)**
No	23(9.5%)	219(90.5%)	1	1

➢ *P<0.05, **P<0.001

Table 4: Independent predictors of male involvement on family planning method use versus contraceptive current use by his partner in Loka Abaya woreda, Ethiopia-2014/15

Variables (n = 634)	Current use of CM by their partner Yes (%)	No (%)	COR(95%CI)	AOR(95%CI)
Age of respondents				
15-24	35(50.0%)	35(50.0%)	0.69(0.37-1.29)	2.4(0.69—8.45)
25-34	218(75.4%)	71(24.6%)	2.12(1.29-3.47)	0.83(0.30-2.28)
35-44	147(80.8%)	35(19.2%)	2.90(1.67-5.05)	0.71(0.30-1.66)
>44	55(59.1%)	38(40.9%)	1	1
Educational status				
Educated	265(74.9%)	89(25.1%)	1.41(0.99-1.99)	0.99(0.57-1.72)
Not educated	190(67.9%)	90(32.1%)	1	1
Total living children				
Have no children	11(40.7%)	16(59.3%)	0.32(0.14-0.75)	0.25(0.09-0.77)*
1-2	168(72.7%)	63(27.3%)	1.26(0.82-1.95)	0.41(0.06-0.88)*
3-4	160(78.0%)	45(22.0%)	1.69(1.06-2.67)	1.05(0.45-2.47)
>=5	116(68.8%)	55(32.2%)	1	1
Annual income				
<1200	8(66.7%)	4(33.3%)	0.59(0.17-2.05)	0.23(0.06-0.90)*
1200-3600	79(66.9%)	39(33.1%)	0.61(0.37-0.98)	1.27(0.63-2.57)
3600-7200	167(68.7%)	76(31.3%)	0.66(0.44-0.97)	0.87(0.51-1.49)
>7200	201(77.0%)	60(23.0%)	1	1
Source of information				
From multiple source	224(70.4%)	94(29.6%)	0.87(0.81-1.61)	1.8(1.09-3.08)*
From one source	231(73.1%)	85(26.9%)	1	1
Believe male involvement on FP is important				
Yes	431(80.9%)	102(19.1%)	13.56(8.17-22.49)	5.1(1.22—8.69)*
No	24(23.8%)	77(76.2%)	1	1
Approve his partner use FP methods				
Yes	441(83.8%)	85(16.2%)	34.83(18.97-93.9)	13.7(2.19-86.41)**
No	14(13.0%)	94(87.0%)	1	1
Had discussion with his partner				
Discuss	348(88.8%)	44(11.2%)	9.9(6.67-14.94)	3.6(1.81-7.18)***
Not discuss	107(44.2%)	135(55.8%)	1	1

➢ = p<0.05, ** = p<0.01, *** = p<0.001

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Realities of IDPs Camps in Nigeria

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Abstract- It is against the background of the emerging trends in internally displacement of persons within the country and its associated camping needs that this study evaluates the realities of IDP camps with a view to proffering recommendation from urban planning perspective.

This study is an explorative one hence it benefits solely from secondary data which were obtained from existing literature and relevant governmental as well as non-governmental data banks.

It was however discovered that there is an increase in the number of IDPs from 868,335 in 2014 to 2,151,979 in 2015 which is caused by unfunded arguments in religious belief, under development and poverty as well as unequal wealth among others. Meanwhile the escalated number of IDPs has also been factored around increase in Boko Haram's terror act in recent years.

Keywords: IDP, physical planning, IDP camps.

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Realities of IDPs Camps in Nigeria

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It was however discovered that there is an increase in the number of IDPs from 868,335 in 2014 to 2,151,979 in 2015 which is caused by unfunded arguments in religious belief, under development and poverty as well as unequal wealth among others. Meanwhile the escalated number of IDPs has also been factored around increase in Boko Haram's terror act in recent years. Despite this challenge, it was discovered that IDPs are usually lodged in overcrowded secondary school premises or dilapidated buildings with no portable water among other environmental challenges and little or no reintegration measure for the IDPs.

The study among others recommends the prevention of human displacement, involvement of stakeholders in the built environment in the establishment and management of IDP camps as well as setting of locational standards for emergency IDP camps.

Keywords: IDP, physical planning, IDP camps.

I. Introduction

Inherent peace is inevitable but its importance cannot be appreciated until when lost. This period is usually characterized with regrets of inability to manage such peace, coping strategies at the time of restlessness and measures of integrating peace into a society with no peace. As this looks like an illustration of typical communities in the ancient times, it is also an expressional model for displacement in the modern day society.

Merriam Webster dictionary describes displacement as the act or process of displacing or the state of being displaced while displace is explained by the same as the removal from usual place. Hence, displacement is relative to norms and location. As a result, it cannot happen without evident change in position. Displacement within the context of societal development cannot be divorced from this ideology. Displacement within this realm is characterized with loss of livelihood, frustration, abuses, threat and assaults e.t.c. (Olukolajo et al, 2014). With these socio economic and spatial psychological implications of displacement and the global increase in the occurrence of the same (Oduwole et al, 2013) it becomes more than necessary to inquire into the phenomenon. The misery of displaced persons in recent years becomes a formidable problem of global significance and implications (Ladan, 2012).

Displaced persons are catered for either by family, governmental/non-governmental organisations or a combination of both. While the needs of the displaced varies depending on their former status and intensity of their displacement, central to displaced persons are shelter, food and security. Meanwhile, it is expected that where shelter is provided, food and security should be provided which makes shelter paramount. Shelters funded by government or non-governmental organizations are provided for either in camps, camp like shelters or unorganized places. Most IDPs in Nigeria flee to neighbouring communities that are relatively safe, usually taking refuge in temporary shelters such as public buildings, schools, and places of worship among others; having been deprived of their homes and sometimes their land and livelihoods (Olukolajo, 2014). UNCHR, discovered that 91.4% of IDPs displaced 2014 live with their relatives while 7.6% lives in camps (UNCHR, 2014). Despite the little proportion of the camp residing IDPs, their state of welfare and preparation for reintegration into the society remains important.

Paucity of data on displaced persons, their camps and afterwards has made it nearly impossible to evaluate the establishment as well as management of IDP camps. The roles of stakeholders in such has also been silent however the need for an inquiry into this is reflected in the continuous increase of the number of IDPs and the disheartening state of IDP camps. The role of environmentalists especially in the management of human settlement of any form cannot be underestimated but in their absence in the planning and management of IDPs camps, flaws are inevitable. Agencies saddled with the management of displacements have been established o reflect more of social mending establishment rather than social preventing and recuperation. Social mending in this regards means ensuring the social system is maintained even at the sight of vulnerability while social preventing entails putting in place condition, process and approaches that ensures nonoccurrence of displacement and social recuperation is the reintegration of the displaced back into the society. It is at achievement of the last stage that complete displacement management can be said to have been achieved. Hence the role of planners of various

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orientation such as advocacy planners, social planners, environmental management experts, disaster managers among other cannot be neglected.

Although attention in both research and policy has been focused towards displaced persons, this varies from the causes and effects of displacement to the management of displacements hence it remains an understatement to posit that displacement as a discus is flooded with diverse converging interests. However, salient issues such as the roles of stakeholders especially in the built environment in the management of IDP camps has not been so discussed and this is the focus of this paper as it attempts to delineate the role of urban planners in the management of IDP camps in Nigeria. The questions central to this paper includes who are displaced persons, what are the situation of the displaced in the country and how has internally displaced persons camps been established and managed in the country.

This paper state in clear terms the role of town planners in the management of IDP camps. To achieve this, it firstly examine the concept of internally displaced persons, it also make an overview description of displacement camps. The role of professionals in the management of these camps was also stated.

II. Internally Displaced Persons: the Concepts

Displaced persons are those who have been forced or obliged or flee to have cause to leave their home or place of habitual residence in particular as a result of, or in order to avoid the effect of armed conflict, situations of generalized violence, violation of human rights or natural or human made disaster (Ladan, 2012). These people when within their own border are referred to as internally displaced persons and if (they) cross an internationally recognized state border are called refugee (OCHA, 2003; UN, 2004). The definition of IDPs has two major components which are the coercive or involuntary character of movement and the fact that such movement takes place between national border (Durosaro and Ajiboye, 2011). However, this definition has been criticized to be more of descriptive than legal because internally displaced persons have no binding international convention dedicated United Nation Agency charged with their protection and assistance (Ellen and Kudzai, 2014). The very reason internal displacement has attracted little concern comparatively to refugee meanwhile both (IDPs and refugees) are subjected to the same condition of psychological imbalance, financial instability and vulnerability.

Internal displacement is caused by under development, poverty, unequal distribution of wealth, unemployment, ethnic tensions, political and economic subjugations of minorities, intolerance, absence of democratic procedures (Oduwole et al, 2013). They are mostly unfortunate victims of the brutality of man against man, various kind of injustice or violence confrontation, perpeterated either by their own government against them or by others such as terrorism, community clashes, religious conflicts, riots, natural disasters and so on (Olukolajo, 2014). This could also be as a result of development projects (Robinson, 2003) and urban renewal activities. Meanwhile, the older causes of internal displacement have been clouded by the upscale of terrorism and related vices in Nigeria. Conflicts have been triggered by disputes over access to land, kingship, cultural, residual citizenship and broader question of identity (Oduwole et al, 2013). The activities of ethno cultural groups have at one time or the other contributed to the increasing number of internally displaced in Nigeria (Olukolajo, 2014). It is a common result of both communal violence and internal armed conflicts (Oduwole et al, 2013). IDPs are the largest group of vulnerable people in the world (UNCHR, 2007) because they are subjected to situation of extreme poverty, human right abuses (Olukolajo et al, 2014) dependent and usually lack choice. This is usually coupled with threat to physical safety and restrictions on freedom of movement (IDMC, 2014). They also suffer emotional problems characterized with fearful events and nightmare (Durosayo and Ajiboye, 2011).

In recent times, the rate of displacement has increased globally (IDMC, 2014) with it being largely accounted for by Africa and Asia. Infact, as reported by Oduwole et al, (2013), the estimated number of globally displaced person is around fifty million and with the current global population estimate of about 10 billion, it implies that about 0.5% of the world is displaced. Armed conflicts, mass violation of human rights as well as flood, earthquake and human disaster have increased the number of people fleeing their homes (Oduwole et al, 2013). This has also affected settlement arrangement as settle along religious and ethnic divides as commonly found in most Nigerian Northern cities (Gambo and Omirin, 2012).

This paper although establishes and delineates between internally displaced persons and refugee intends to address the issue of displacement from another angle which is the realities of IDP camps. Little or no research attention has been directed along this lane especially from urban planning perspective possibly because of the sheer over look of these camps, its non-permanent nature, the situation at which development of such emerges. Irrespective, the spatial characteristics of IDPs camps makes it a responsibility of inquiry for town planners. Also, the need for the ordering of such settlements irrespective of its situation of occurrence further clarifies the need for the positioning of urban planners in its development and management.

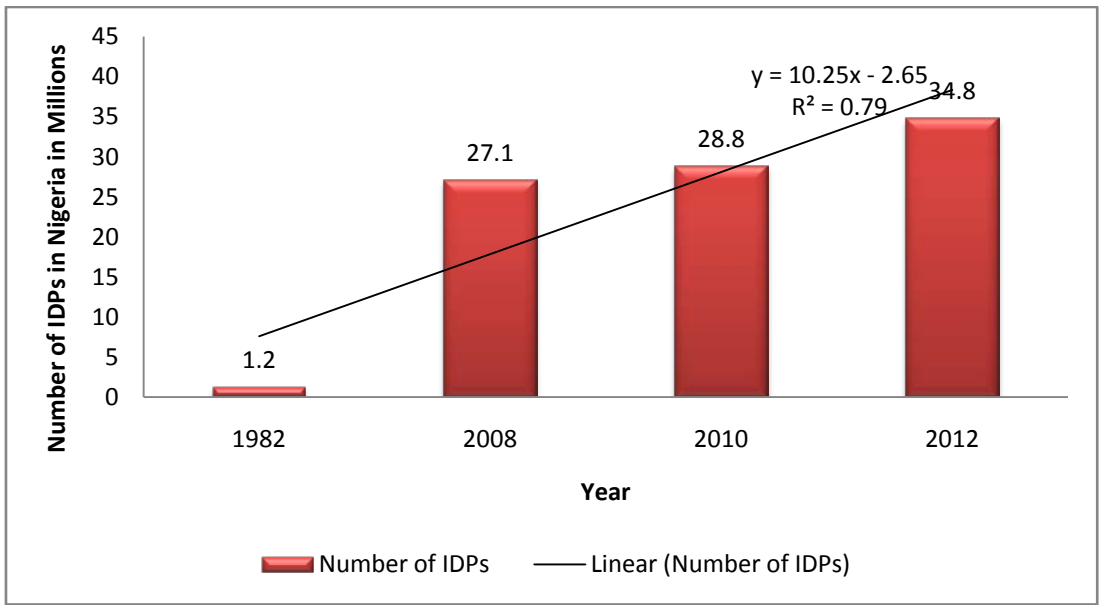
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III. Trend of Internal Displacement

IDMC accounts that in 1982; only 1.2 million people were displaced in 11 countries while 20- 25 million people were displaced at the end of 2012. This indicates a global increase in the incidence of IDPs. The cause of this is not farfetched as it includes exposure of countries to disasters, violence and increase tide of terrorism. Of those that were internally displaced by conflict and communal violence, more than half, an estimated 12.1 million persons are in Africa with over 1 million in fifteen ECOWAS states (Onijala, 2006). Around the world, some 23.7 million women, men and children has been internally displaced by conflict, communal violence and internal strife (Kalin, 2006). The number of displaced induced by disaster far outweigh those from natural circumstance such as landslide, ocean surge, fire e,t,c (Mango, 2011). The total number of displaced persons is currently estimated around fifty million worldwide with majority of these people in Africa (Oduwole et al, 2013).

The full scope of IDPs in Nigeria is not known (Egwu, 2011). This is because of the limited capacity of the state to collect data and the complex nature of displacement problems. Where such figures exist, they are inaccurate because of the fluctuating nature of internal displacement (Durosaro and Ajiboye, 2011). Despite this, account of IDPs in Nigeria still exists, though this may not cover the whole of the nation, or may reflect those accounted to terrorism with partial or total neglect of those from other sources. IDMC in its global overview in 2014 revealed that Nigeria has Africa highest number of persons displaced by conflict ranking behind Syria and Colombia. Tracking Matrix report of 2014 accounted that there are about 389, 381 IDPs (60, 232 households) in Adamawa, Bauchi, Gombe, Taraba and Yobe states with the highest occurrence of such individuals in Yobe (125,991 IDPs), Adamawa (123,601 IDPs) and Taraba (81, 790 IDPs). There are about a half million of IDPs in Nigeria alone (Onijala, 2006). This is due to unfounded argument in religious, belief, underdevelopment, poverty, unequal distribution of wealth, ethnic tensions, unemployment, political and economic subjugation of minorities, absence of democratic procedures, intolerance and many other factors (Olukolajo et al, 2014). The advancement of bokoharam activities from territorial attack and inland invasion adds to the number of IDPs (IDMC, 2013)

The emergence of IDPs can be traced to violent communal clash in mid 1960s (Olagunju, 2006). However, modern trend of large scale displacement is associated with the return of democracy in 1960 (Oduwole et al, 2013). Since return of civilian rule in 1999, record has it that thousands of people have been killed in recurring intercommunal conflicts and politically motivated violence that has also led to large waves of internal displacement (IDMC, 2013).In 2009, thousands of people were displaced in one of the clashes between government forces and MEND (Oduwole et al, 2013), a situation that increases the number of displaced persons in the country. Additional 2 million was added across the country by flooding in 2012. In 2014, the escalating violence caused by the book haram insurgency in the north eastern region has led to an increase in the number of IDPs especially in Adamawa, Borno, Bauchi, Gombe and Taraba states.



Source: Adapted from IDMC, 2014

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Map by: IDMC
More maps are available at www.internal-displacement.org/search?Type=Map

IV. The Realtieis of IDPs Camps

Displacement leaves negative socio economic footprints in millions of people worldwide (Olukolajo et al, 2014). During violent conflicts or natural disaster, IDPs are usually forced to leave; most houses and properties are destroyed, looted or burnt down (Ladan, 2012). It leaves the displaced with the quest for shelter and survival. However with the incapacity of IDPs these quests is usually hindered. Meanwhile, this is either catered for by relatives or government. While it is the constitutional responsibility of the latter that these needs are met, the former through social ties and sense of communal relationship may provide such. It must be noted here that the primary needs of IDPs remains shelter, food and opportunities to reduce dependence.

Olukolajo (2014) revealed that most IDPs has reportedly prefer to seek shelter with relatives rather than living in camps. The vast majority of displaced persons in Nigeria reportedly seek refuge with family, friends or host communities in areas where their ethnic or religious group is in majority (Je' adayibe, 2008). This is partly because of their tentative assurance of freedom, care and provision which comparatively is better provided by relatives than in IDPs camps. This relatives could be near if displacement is not at large scale such that relatives are also not displaced but in the situation of the contrary, living in camps are usually resulted to. The importance of camping in management of internal displacement cannot be underestimated. Well managed camps and camp like setting can strengthen physical, legal and material protection and security. In Nigeria, the recent magnitude of displacement and the distance of such displacement to relatives of victims have usually aided the living in camps of IDPs. Also, since majority of those displaced in Nigeria are women and children with little affinity with relatives, their living in camps in inevitable. The position of National Emergency Management Authority, Norwegian Refugee Council and other organisations cannot be underestimated in this regard.

Coupled with the fact that there are no official IDPs camp of long lasting nature in the country (Oduwole, 2013), the non-availability of accurate and comprehensive record as regards displacement is also reflected in the situation of camping. The statistics of IDPs camps in the country is not available and their condition is remains inaccessible. Their spatial characteristics remain unmapped and where data exists it is not holistic as it is usually fragmented. These are mostly accounts of individual authority in charge of displacement management neglecting the unregistered camps which actually accounts for the highest numbers of IDPs camps. Internal Displacement Monitoring Committee (IDMC) an offshoot of the Norwegian refugee council (NRC) an independent, non-governmental.

Despite this unwholesome situation, national dailies such as punch, tribune and vanguard among others has pointed gap in the situation of IDP camps in the country. The absence of united nation convention principles on the establishment and management of IDPs camp has made its establishment substantially relative rather than definitive. The question that arises here includes what is the situation of IDP camps in Nigeria and what are the roles of town planners in the establishment and administration of these camps.

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UNICEF in April, 2015 revealed that in the IDP camps, 18% threshold of malnutrition is recorded, a situation higher than the global emergency threshold of 15%.

In December, 2015, Rotimi Olawale in the paradigm identified welfare, security and rehabilitation as problems faced by IDPs in their camps. With particular reference to Malkohi IDP camp in Yola, he accounted that the camp has 215 households, 777 children excluding men and women, has no security, no electricity and health care facilities. Infact, one of the publications of "The Nation", a national daily described the unhealthy situation of IDPs camps in Nigeria as "In shelters…….basic amenities like kitchen, water, electricity, clinics and classrooms blocks are almost non-existent. Some camps have shown to be derelict and unfit for human habitation while food supply and security have posed serious challenge both for managers and inmates".

In a related tone, naij.com (an online news agency) revealed that as at May, 2015, there are 21 IDP camps across the northern part of Nigeria. It went further to report that inhabitants of the camps have to deal with critical challenges as absence of first aid challenges. The above description reveals a non-palatable condition of IDP camps which IDPs were forcefully subjected to.

V. Postioning Planners in the Management of IDP Camps

The complex nature of problems associated with internally displaced persons (IDPs) as well as their camping, no doubt demands an interdisciplinary approach. However, the role of different professionals has not been so delineated to achieve section (18) of guiding principle of IDPs. This has overtime caused confusion amidst professionals, overlapping of offices and authorities as well as poor responses to displacement issues. In order to eradicate the earlier mentioned with particular reference to urban and regional planners, this section explains the position of planners in the management of IDP camps.

Management from the generic perspective entails assurance of effectiveness and sustainability of a process through predefined activities. Hence, management of IDP camps should start from the prevention of displacement as this will help slim the population of displaced persons in camps. In this regard, town planners are to engage in advocacy planning. Advocacy planning helps ensure good governance and aids the achievement of goals and purpose of the masses. Most of the causes of human induced displacement are entangled with bad governance, exclusion of the poor, social dichotomy among others. Advocating on behalf of the masses will centralize development, subject individual to equal opportunities among others. Provision of jobs will discourage youths from acts of terrorism and other criminal activities. The role of poverty in human induced displacement cannot be underestimated hence planners are to be engaged for the envisioning of smart cities to provide resilience opportunities for financially vulnerable individuals.

At the sight of displacement where IDP camps are inexcusable, town planners with a complete orientation of social, economic, legal and physical percepts are within the purview of their profession needed for:

A. *Spatial Location of the IDP Camps:* the realities of IDP camps start with location of such camps. This decision goes beyond provision of security and shelter at the sight of no choice to include convenience of the location, infrastructural strength of the community and the IDP camps among others. This isthe chief responsibility of town planners as planning itself aims at ensuring that the right thing is at the right place at the right time. The questions of where can IDPs be located?, if schools are to be used, what is the capacity of such schools among others can be answered.
B. *Data Collection and mapping:* Planners can engage in the collection of data of IDPs and the camps. This will give a better definition and description of the same and such provision required by these vulnerable individuals can be provided.
C. Rehabilitation: the most important aspect of IDPs management is rehabilitation as the ineffective practice of these causes protracted displacement, a situation that drives the economic, social and physical fragment of the society. The real IDP problem is that people cannot return to their old homes for fear of persecution (Olagunju, 2006). Because of the reduction in choice due to displacement, there is need for rehabilitation through reintegration of IDPs back into their society or relatively safe environment where shelter, jobs, social life among others will be provided. However, these areas are expected to reflect displaced persons culture, accommodate their needs and sustain their desires. This can be professionally provided for by town planners.

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Data Analytics and Managing Health and Medical Care

By Jeffrey E. Jarrett
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Abstract- The purpose is to introduce the demand for the quality movement practice in problems associated with public health, diagnostic testing and other health related problems. We examine problems involving (1) Multivariate control charts which simultaneously monitor correlated variables; (2) we explain why the scale on multivariate control charts is unrelated to the scale of the individual. Variables control charts: and (3) discover that out of control signals in multivariate charts do not reveal which variable or combination of variables causes the signal and application of quality monitoring. New methods provide methods for MPC charts focus on the average run length as the decision factor. We indicate that other decision criteria in multivariate control charts are available and these methods can be useful in evaluating the design and implementation of multivariate charts in special circumstances.

Keywords: public health and water treatment, statistical process control (SPC), medical care, multivariate quality control, auto correlated time series, average run length (ARL), common and special causes.

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Data Analytics and Managing Health and Medical Care

Jeffrey E. Jarrett

Abstract- The purpose is to introduce the demand for the quality movement practice in problems associated with public health, diagnostic testing and other health related problems. We examine problems involving (1) Multivariate control charts which simultaneously monitor correlated variables; (2) we explain why the scale on multivariate control charts is unrelated to the scale of the individual. Variables control charts: and (3) discover that out of control signals in multivariate charts do not reveal which variable or combination of variables causes the signal and application of quality monitoring. New methods provide methods for MPC charts focus on the average run length as the decision factor. We indicate that other decision criteria in multivariate control charts are available and these methods can be useful in evaluating the design and implementation of multivariate charts in special circumstances. Furthermore, these techniques can be applied in the supply chain environment where processes are multivariate, dynamic or both and are purpose is to avoid shortages and overages. Simple SPC charts though very useful in some environments may have limited use in public health and related activities. In any event, future research should focus on exploring the characteristics of the public health and finding the best model to implement quality planning and improvement programs. Multivariate analysis should provide many of the new tools for adaption in improving health and water quality and reduce the costs of, stoppages and threats to populations.

Key Terms: public health and water treatment, statistical process control (SPC), medical care, multivariate quality control, auto correlated time series, average run length (ARL), common and special causes.

I. Introduction

Public Health and Water Quality management involve the leveraging of channel wide integration to better serve public needs. Increases in productivity and quality control and improvement will follow when public health managers implement and coordinate quality management activities upstream. Public health management should recognize anew the aspects of quality control and quality assurance requires two duties to be undertaken. First, we refer to the process whereby measures are taken to make sure defects in services are not part of the final output, and that the output meets quality and acceptable health standards. Second, one may observe that quality assurance entails overlooking all aspects, including design, development, service, installation, as well as documentation. The Quality movement is the field that ensures that management maintains the standards set and continually improves the quality of the output. The quality movement [Lee and Wang (2003] offers users sound lessons that can be very powerful to address public health lessons. Instead of final, end-service source inspection, the quality movement emphasizes prevention, total quality management, source inspection, process control and continuous improvement. These are all ingredients for successful and effective ways to manage and mitigate the risks in public health application such as water quality control {See Woodall, (2005) and Papaioannon et al. (2010a) and (2010b)].

We introduce the philosophy and methods of the quality improvement to achieve the best results of health service operations. This paper focuses on supply chain planning with quality control in an environment with multiple service centers and multiple customers. We first discuss the needs for quality planning in the supply chain environment to focus on where the notion of statistical process (or quality) control (SPC or SQC) is so vital to the performance of a health programs' environment to focus on where the notion of SPC fits and why it is so vital to the performance of public health programs in the global environment. In turn, we introduce and discuss the desire for more sophisticated methods to insure that quality and improvement is maintained in public health processes including water treatment systems.

While public health programs are so crucial to the general health of society, these health systems must be sustained by both preventative and emergency measures. Zhang, Yu and Huang (2009) propose several sophisticated strategies for dealing with SPC strategies in an environment where service flows continue over time. Their study presents principle agent models regarding the consumer's quality evaluation and the supplier's quality prevention level decisions. Studies such as this may produce results not heretofore examined by the practioner's of SPC in public health and water quality. In addition, threats to water quality are real and many and measures must be developed to indicate when water quality and similar processes are not operating in an efficient and productive manner. These measures include those of SPC which will indicate when risks are present in the inspection processes in water treatment and public health

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programs. Since public health programs are increasingly globalized, these SPC measures must be strategically incorporated inspection and monitoring programs and the choice of the particular SPC procedures are critical in developing an optimal plan.

Most SPC methodologies assume a steady state process behavior where the influence of dynamic behavior either does not exist or is ignored. The focus is on the control of only one variable at a time and distinguishes between Phases I[analysis of historical data] and II [monitoring quality levels]. Specifically, SPC controls for changes in either the measure of location or dispersion or both. SPC procedures as practiced in each phase may disturb the flow of the service production process and operations. In recent years, the use of SPC methodologies to address the process where behavior is characterized by more than one variable is emerging. The purpose of this next section is to review the basic *Univariate* procedures to observe how one improves the performance of SPC to achieve better measures in Phase II by considering *run length performance*.

II. Univariate (SHEWHART) Control Charts

A Shewhart control chart which is the central foundation of univariate SPC has one major shortcoming. This control chart is considers only the last data point and does not carry a memory of the previous data. As a result, small changes in the mean of a random variable are not likely to be detected rapidly. Exponentially weighted moving average (EWMA) charts improve upon the detection of small process shifts. Rapid detection of relatively small changes in the quality characteristic of interest and ease of computations through recursive equations are some of the many good properties of the EWMA chart that make it attractive.

EWMA chart achieves faster detection of small changes in the mean. The EWMA chart is used extensively in time series modeling and forecasting for processes with gradual drift (Box and Draper, 1998).EWMA provides a forecast of where the process will be in the next instance of time. It thus provides a mechanism for dynamic process control (Hunter, 1986). Late, examples of these methods will be analyzed.

The EWMA is a statistic for monitoring the process that averages the data in a way that gives exponentially less and less weight to data as they are further removed in time. The procedures for developing EWMA control charts give details on implementing this type of Phase I system. [Montgomery (2013) contains the development of the models for finding the control limits in this for the univariate charts and need not be discussed further at this point.]

In many situations, the sample size used for process control is n = 1; that is the sample consists of an individual unit [Montgomery and Runger, (2003)].In such a situation, the individuals control chart is used. The control chart for individuals uses the moving range of two successive observations to estimate the process variability. Such small samples may lead to false signals which increase the likelihood of Type II errors, i.e., the error of leaving a process alone when it should be stopped and a search for the malfunctions should be implemented. Public health models were further explored in detail by

Often, in public health and water treatment programs, the distinction between Phases I and II is not clear. Sonesson and Bock (2003) pointed out problems and issues related to statistically based evaluations. Researchers, often, did not examine *average run length* (ARL) of a proposed method over a variety of alternative process shifts. ARL performance of a proposed method or program for an in-control state and for a single shift in the service process for which the proposed detection program optimizes must be evaluated. If the system is not optimized, misplaced control limits may result. The system for detection of quality shifts is sub-optimized and better techniques should be sought. In the next section, we introduce methods and their possible use in processes having dynamic inputs [Yeh and Hwang, (2004)].

Alwan(1992) found that more than 85% of process control applications studied resulted in charts with possibly misplaced control limits. In many instances, the misplaced control limits result from the autocorrelation of the process observations, which violates a basic assumption often associated with the Shewhart chart (Woodall (2000)). Autocorrelation of process observations has been reported in many industries, including cast steel (Alwan (1992), wastewater treatment plants (Berthouex, Hunter, and Pallesen (1978)), chemical processes industries (Montgomery and Mastrangelo (1991) and many other service industries and programs. Several models have been proposed to monitor processes with auto correlated observations. Alwan and Roberts (1988) suggest using an autoregressive integrated moving average (ARIMA) residuals chart, which they referred to as a special cause chart. For subsample control applications, Alwan and Radson (1992) describe a fixed limit control chart, where the original observations are plotted with control limit distances determined by the variance of the subsample mean series. Montgomery and Mastrangelo (1991) use an adaptive exponentially weighted moving average (EWMA) centerline approach, where the control limits are adaptive in nature and determined by smoothed estimate process variability. Lu and Reynolds (1999) investigate the steady state ARL of cumulative sum (CUSUM), EWMA, and Shewhart control charts for auto correlated data modeled as a first order autoregressive process plus an additional random error

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term. Last, Box and Luceno (1997) considering quality monitoring by feedback adjustment.

A problem with all these control models is that the estimate of the process variance is sensitive to outliers. If assignable causes are present in the data used to fit the model, the model may be incorrectly identified and the estimators of model parameters may be biased, resulting in loose or invalid control limits (Boyles (2000)). To justify the use of these methods, researchers have made the assumption that a period of "clean data" exists to estimate control limits. Therefore, methods are needed to assure that parameter estimates are free of contamination from assignable causes of variation. Intervention analysis, with an iterative identification of outliers, has been proposed for this purpose. The reader interested in more detail should see Alwan (2000, pp 301-307), Atienza, Tang and Ang (1998), and Box, Jenkins, and Reinsel (1994, pp. 473-474 and 2008). Atienza, Tang, and Ang (1998) recommend the use of a control procedure based on an intervention test statistic, λ, and show that their procedure is more sensitive than ARIMA residual charts for process applications with high levels of positive autocorrelation. They limit their investigation of intervention analysis, however, to the detection of a single level disturbance in a process with high levels of first order autocorrelation. Wright, Booth, and Hu (2001) propose a joint estimation method capable of detecting outliers in an auto correlated process where the data available is limited to as few as 9 to 25 process observations. Since intervention analysis is crucial to model identification and estimation, we investigate varying levels of autocorrelation, autoregressive and moving average processes, different types of disturbances, and multiple process disturbances.

The ARIMA and intervention models are appropriate for auto correlated processes whose input streams are closely controlled. However, there are quality applications, which we refer to as "dynamic input processes," where this is not a valid assumption. The treatment of wastewater is one example of a dynamic process that must accommodate highly fluctuating input conditions. In the health care sector, the modeling of emergency room service must also deal with highly variable inputs. The dynamic nature of the input creates an additional source of variability in the system, namely the time series structure of the process input. For these applications, modeling the dynamic relationship between process inputs and outputs can be used to obtain improved process monitoring and control as discussed by Alwan (2000, pp. 675-679). West, Delana and Jarrett (2002) proposed the following transfer function model to solve problems having dynamic behavior. If a process quality characteristic a_t, has a time series structure, an ARIMA model of the following general form can represent the undisturbed or natural process variation:

$$\Phi\ (B)\ a\ (B)z_t = \theta(B)\ at \qquad (1)$$

In equation (1), B represents the back-shift operator, where B (z_t) = z_{t-1}. The value of Φ (B) represents the polynomial expression (1 – $_{\Phi_1}$ (B) - … - $_{\Phi_1}B^p$), which models the autoregressive (AR) structure of the time series. The value of the Θ (B) represents the polynomial (1 – Θ_1 (B) - … - Θ_q B^q), which models the moving average (MA) structure of the time series. The value of *a* (B) represents the expression (1 – B) $\frac{d}{1}$(1 – $B^8)\frac{d}{2}$, where d = d_1 + sd_2. This quantity is a polynomial in B that expresses the degree of differencing required to achieve a stationary series and accounts for any seasonal pattern in the time series. Finally, a_t is a white noise series with distribution N (O^2_a). This model is described by Chen and Liu (1993a, 1993b). If the series z_t is contaminated by periods of external disturbances to the process, the ARIMA model may be incorrectly specified, the variability of the residuals overestimated, and the resulting control limits incorrectly placed.

The following transfer function model of Box and Tiao (1975) describes the observed quality characteristic, Y_T, as a function of three courses of variability:

$$Y_t = v(B)\ x_{t-b} + \frac{w(B)}{\delta(B)}\ I_t + \frac{\Theta(B)}{\phi(B)}a_t \qquad (2)$$

The first term v (B)x_{t-b}, is the dynamic input term and represents an impulse function. *v* (B), applied to the input x_{t-b} with a lag of b time periods. If a dynamic relationship between the input and output time series exists, lagged values of process inputs can be modeled, resulting in considerable reduction of unexplained variance. The second term, (w (B)/δ(B)I_t, is the intervention term and identifies periods of time when assignable causes are present in the process. Here, I_t is an indicator variable with a value of zero when the process is undisturbed and a value of one when a disturbance is present in the process. See, for example, Box, Jenkins and Reinsel (1994, p 392, or 2008) for the development of the transfer function term, and Box, Jenkins and Reinsel (1994, p 462, or 2008) for details of the intervention term. The rational coefficient term if I_t is a ratio of polynomials that defines the nature of the disturbance as detailed in Box, Jenkins and Reinsel (1994, p 464, or 2008). The third term (θ(B)/Φ (B) a_t, is the basic ARIMA model of the undisturbed process from Equation (9). We refer to Equation (10) as the "transfer function" model throughout this paper.

Different types of disturbances can be modeled by the proper design of the intervention term. The two most common disturbances for quality applications are a point disturbance, with an impact observed for only a single time period, and a step disturbance, with an impact persisting undiminished through several

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subsequent observations. The point disturbance is modeled as an additive outlier (AO). An AO impacts the observed process at one observation. The AO is modeled in the form

$$\frac{w\,(B)}{\delta\,(B)} = w_o \qquad (3)$$

where w_o is a constant. A step disturbance to the process is modeled as a level-shift outlier (a form of innovational outlier or IO) in the form.

$$\frac{w\,(B)}{\delta\,(B)} = \frac{Wo}{1-B} \qquad (4)$$

Chang, Tiao, and Chen (1988) and Chen and Liu (1993a, 1993b) discuss both types of disturbances.

Chang, Tiao, and Chen (1988) extended the concepts of Box and Tiao (1975) to an iterative method for detecting the location and nature of outliers at unknown points in the time series. The above researchers defined procedures for detecting innovational outliers and additive outliers and for jointly estimating time series parameters. Their work also demonstrates the need for future study of the nature of outliers.

III. Multivariate Control Charts

Multivariate analyses utilize the additional information due to the relationships among the variables and these concepts may be used to develop more efficient control charts than simultaneously operated several univariate control charts. The most popular multivariate SPC charts are the Hotelling's T^2 (see Sullivan and Woodall (1996) and multivariate exponentially weighted moving average (MEWMA) (Elsayed and Zhang, 2007). Multivariate control chart for process mean is based heavily upon *Hotelling's T^2* distribution, which was introduced by Hotelling (1947). Other approaches, such as a control ellipse for two related variables and the method of principal components, are introduced by Jackson (1956) and Jackson (1959). A straightforward multivariate extension of the univariate EWMA control chart was first introduced in Lowry Woodall, Champ and Rigdon (1992) and Lowry and Montgomery(1995)developed a multivariate EWMA (MEWMA) control chart. It is an extension to the univariate EWMA.

$$Z_i = \Lambda\,\overline{X}_l + (I - \Lambda)\,Z_{i-1} \qquad (5)$$

Where I is the identity matrix, Z is the i^{th} EWMA vector,$\overline{X}$ is the average ith observation vector I = 1, 2… n, Λ is the weighting matrix. The plotting statistic is

$$T_i^2 = Z_i \sum_{Zi}^{-1} Z_i \qquad (6)$$

Lowry and Montgomery(1995) showed that the (k, 1) element of the covariance matrix of the ith EWMA, $\sum_{Zi}$ is

$$\sum_{Zi}(k, 1) = \frac{\lambda_k \lambda_1 [1-(1-\lambda_k)^{l}\,(1-\lambda_l)^{i}]}{[\lambda_k + \lambda_1 - \lambda_k \lambda_1]}\,\boldsymbol{\sigma}_{k,1} \qquad (7)$$

where $\boldsymbol{\sigma}_{k,1}$ is the (k, 1) element of $\sum$, the covariance matrix of the$\overline{X}$'s.

If $\lambda_1 = \lambda_2 = \ldots\ldots = \lambda_p = \lambda$, then the above expression simplifies to

$$\sum_{Zi}(k, 1) = \frac{\lambda}{2-\lambda}\,[1 - (1-\lambda)^{2i}]\,\sum \qquad (8)$$

[where $\sum$ is the covariance matrix of the input data].

There is a further simplification. When I becomes large, the covariance matrix may be expressed as:

$$\sum_{Zi} = \frac{\lambda}{2-\lambda}\sum \qquad (9)$$

Montgomery and Wadsworth (1972) suggested a multivariate control chart for process dispersion based

$$\begin{aligned} UCL &= (|S|\ 1b_1)\ (b_1 + 3b_2^{1/2}) \\ CL &= |S| \\ UCL &= (|S|\ 1b_1)\ (b_1 + 3b_2^{1/2}) \end{aligned} \qquad (10)$$

where

$$b_1 = [1/\,(n\text{-}1)^p \prod_{i=1}^{P}(n-1) \qquad (11)$$

and

$$b_2 = [1/\,(n\text{-}1)^{2P}]\ \prod_{i=1}^{P}(n-1)\ [\prod_{j=1}^{P}(n-j+2) - \prod_{j=1}^{P}(n-j) \qquad (12)$$

In the next section, we explore how multivariate methods improve process control in the supply chain.

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IV. Interpretation of Multivariate Process Control

Multivariate quality control (MPC) charts (Hotelling, 1947, Jackson, 1956, 1959 and 1985, Hawkins, 1991, and 1993, Kalagonda and Kulkarni, 2003 and 2004, Wierda, 1994, and Jarrett and Pan, 2006, 2007a and 2007b, Mestik, Mastrangelo and Forrest, 2002) have several advantages over creating multiple Univariate charts for the same business situation:

1. The actual control region of the related variables is represented. In the bivariate case the representation is elliptical.
2. You can maintain a specific probability of a Type 1 error (the risk).
3. The determination of whether the process is out of or in control is a single control limit.

Currently, there is a gap between theory and practice and this is the subject of this manuscript. Many practitioners and decision-makers have difficulty interpreting multivariate process control applications although the book by Montgomery (2013) addresses many of the problems of understanding not discussed in the technical literature noted before. For example, the scale on multivariate charts is unrelated to the scale of any of the variables, and an out-of-control signal does not reveal which variable (or combination of variables causes the signal).

Often one determines whether to use a univariate or multivariate chart by constructing and interpreting a correlation matrix of the pertinent variables. If the correlation coefficients are greater than 0.1, you can assume the variables correlate, and it is appropriate to construct a multivariate quality control chart.

The development of information technology enables the collection of large-size data bases with high dimensions and short sampling time intervals at low cost. Computational complexity is now relatively simple for on-line computer-aided processes. In turn, monitoring results by automatic procedures produces a new focus for quality management. The new focus is on fitting the new environment. SPC now requires methods to monitor multivariate and serially correlated processes existing in many time series of public health and water treatment programs.

SPC emphasizes the properties of control for decision making while it ignores the complex issues of process parameter estimation. Estimation is less important for Shewhart control charts for serially independent processes because the effects of different estimators of process parameters are nearly indifferent to the criterion of *average run length* (ARL). Processes' having serial correlation, estimation becomes the key to correct construction of control charts. Adopting workable estimators is then an important issue.

In the past, researchers studied SPC for serially correlated processes and SPC for multivariate processes separately. Research on quality control charts for correlated processes focused on Univariate processes. Box, Jenkins, and Macgregor (1974) and Berthouex, Hunter and Pallesen (1978) noticed and discussed the correlated observations in production processes. Alwan and Roberts (1988) proposed a general approach to monitor residuals of Univariate auto correlated time series where the systematic patterns are filtered out and the special changes are more exposed. Other studies include Montgomery and Friedman (1989), Harris and Ross (1991), Montgomery and Mastrangelo (1991), Maragah and Woodall (1992), Wardell, Moskowitz and Plante (1994), Lu and Reynolds (1999), West, Delana and Jarrett (2002) and West and Jarrett (2004), English and Sastri (1990), Pan and Jarrett (2004) suggested *state space methodology* for the control of auto correlated process. Further, additional technologies implemented by Testik (2005), Yang and Rahim (2005) and Yeh, Huang and Wu (2004) provide newer methods for enabling better MPC methods.

In Alwan and Roberts' approach, a time series is separated into two parts that are monitored in two charts. One is the common-cause chart and the other is the special-cause chart. The common cause chart essentially accounts for the process's systematic variation that is represented by an autoregressive-integrated-moving-average (ARIMA) model, while the special cause chart is for detecting assignable causes that can be assigned in the residual of the ARIMA model. That is, the special cause chart is designed as Shewhart-type chart to monitor the residuals filtered and whitened from the auto correlated process (with certain or estimated parameters). In this analysis, the authors suggest methods used in conventional quality control software (i.e., Minitab) entitled multivariate T^2 and Generalized Variance control charts. These multivariate charts show how several variables jointly influence a process or outcome. For example, you can use multivariate control charts to investigate how the tensile strength and diameter of a fiber affect the quality of fabric or any similar application. If the data include correlated variables, the use of separate control charts is misleading because the variables jointly affect the process. If you use separate univariate control charts in a multivariate situation, Type I error and the probability of a point correctly plotting in control are not equal to their expected values. The distortion of these values increases with the number of measurement variables. In the next section, we will consider an illustration.

1. Multivariate charts simultaneously monitor correlated variables. To monitor more than one

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variable using univariate charts, you need to create a univariate chart for each variable.

2. The scale on multivariate control charts is unrelated to the scale of the individual variables.
3. Out of control signals in multivariate charts do not reveal which variable or combination of variables caused the signal.

Whenever the variables are correlated, multivariate control charts will achieve superior perform. A correlation matrix will show whether the variables are cross correlated. As we noted in the above charts, if the variables cross correlated, the use of separate control charts is misleading because the variables jointly affect the process. If you use separate univariate control charts in a multivariate situation, a Type I error and the probability of a point correctly plotting in control are not equal to their expected values. The distortion of these values increases with the number of measurement variables stated differently, the results of the use of univariate analysis are biased.

When one finds the out of control point in a multivariate control chart, the solution is often not very simple. An out of control point will not easily indicate which or how many of the variables give evidence of a special cause. When one finds out-of-control points, one may wish to create separate univariate charts to investigate each variable. However, one must interpret these charts with great caution since these charts do not account for the multivariate nature of the process data. Last, there are additional topics that can aid the data analysts in identifying the causes of processes being out of control. These "G and H" [Benneyan, (2001)] charts provide for monitoring the number of cases between hospital-acquired infections and other adverse events. Much of these methods are now included in various in commercial quality control software.

V. Conclusions and Suggestions

We discussed the control chart usage and illustrate why better procedures are available to supply chain managers. For example, we illustrated methods developed by Alwan and Roberts' utilizing residual chart analysis. Later, we explored methods such as West et al. transfer function application and traditional Multivariate Hotelling T^2 chart to monitor multivariate and multivariate serially correlated processes (those with dynamic inputs). The scheme can be viewed as a generalization of Alwan and Roberts' special cause approach to multivariate cases. The guideline and procedures of the construction of VAR residual charts are detailed in this paper. Molnauet.al. (2001) produces a method for calculating ARL for multivariate exponentially weighted moving average charts (2001). Mastrangelo and Forrest (2002) simulated a VAR process for SPC purposes. However, the general study on VAR residual charts is heretofore not reported. In addition, more recent studies by Kalagonda and Kulkarni (2003 and 2004), and Jarrett and Pan, (2006, 2007a and 2007b) indicate additional ways in which one can improve upon the multivariate methods currently available in commercial quality control software such as *Minitab*® and others. These newer techniques provide more statistically accurate and efficient methods for determining when processes are in or not control in the multivariate environment. When these methods become commercially available, practitioners should be able to implant these new statistical algorithms for multivariate process control charts (MPC) using ARL measure to control and improve output.

These new methods provide methods for MPC charts focusing on the average run length. The purpose is to indicate how useful these techniques are in the supply chain environment where processes are multivariate, dynamic or both. Simple SPC charts though very useful in simple environments may have limited use in public health. In any event, future research should focus on exploring the characteristics of the public health and finding the best model to implement quality planning and improvement programs. Multivariate analysis should provide many of the new tools for adaption in improving health and water quality. The costs of, stoppages and threats to the public health will diminish when managers explore the usefulness of multivariate methods noted before. Last, these quality analysts much be trained, retrained and continually trained in those methods that best fit the supply chain environment. Simple Shewhart methods no longer are sufficient to manage in the global environment of public health.The intensive use of automatic data acquisition system and the use of computing for process monitoring have led to an increased occurrence of monitoring processes that utilize statistical process control. These analyses are performed almost exclusively with multivariate methodologies. Often, today, analysts utilizeG charts when one desires to monitor the number of opportunities or, in many cases, the number of days between rare events, such as infections or surgical complications. For example, in cases of Wrong-site surgeries, patient falls, infection outbreaks, accidental needle stick and harmful medication errors. Last, mathematical modelers in recent year have made great strides in predicting rare events. This modeling method may show promise in the future to explain and identifying rare events and is likely to produce newer and better methods for improved quality control methods. Novak (2011) shows methods for treating the cases of rare events in many applications that have similar statistical properties as those in public health.

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Analysis of the Impact of Cell Pohone use on Pakistani Culture

By Abdul Ghafoor Awan & Syed Farhan Gilani

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Abstract- In this study we have investigated the impact of Cell Phone on Pakistani Culture with special reference to Multan Region. We constructed a questionnaire and conducted a field survey and collected data through face-to-face interviews of 206 respondents, who were randomly selected. Our purpose of Research was to measure the cultural changes in Pakistan due to the use of cell phone and its impact on Pakistani society particularly youth. We used demographic statistics, Likert scale and Multiple Regression methods as measurement scales. The results of our study are robust and significant because we found that the use of cellphone has brought significant change in Pakistani culture, norms, habits and behavior of the people. However, some changes are positive and some are negative. We specifically noted that cheap night packages of cellphone and internet companies is bringing negative effect on the study of students and their other physical activities.

Keywords: *cultural changes, cell phone, youth, night packages.*

GJHSS-H Classification: *FOR Code: 130205p*



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Analysis of the Impact of Cell Pohone use on Pakistani Culture

Abdul Ghafoor Awan [α] & Syed Farhan Gilani [σ]

Abstract- In this study we have investigated the impact of Cell Phone on Pakistani Culture with special reference to Multan Region. We constructed a questionnaire and conducted a field survey and collected data through face-to-face interviews of 206 respondents, who were randomly selected. Our purpose of Research was to measure the cultural changes in Pakistan due to the use of cell phone and its impact on Pakistani society particularly youth. We used demographic statistics, Likert scale and Multiple Regression methods as measurement scales. The results of our study are robust and significant because we found that the use of cellphone has brought significant change in Pakistani culture, norms, habits and behavior of the people. However, some changes are positive and some are negative. We specifically noted that cheap night packages of cellphone and internet companies is bringing negative effect on the study of students and their other physical activities. Thus, we have suggested that internet service providers may raise the tariffs of night package so that the youth particularly students use it for productive purpose and have sufficient time to sleep in the night properly and pay attention on their academic activities on next day.

Keywords: cultural changes, cell phone, youth, night packages.

I. Introduction

a) Background of study

Mr. Graham Bell invented a device by which two persons can communicate with each other at a distance. At that time nobody knew that he was laying foundation for multi-dimensional industry. This was the start of globalization because due to use of this device information flow started rapidly. Pakistan came into being on 14th August 1947 at that time there were no proper infrastructure of roads, residence, water, sewerage, electricity, telecommunication etc. After that things developed gradually and most of the governments pay attention to telecom sector particularly Nawaz Sharif's government tried to develop the basic infrastructure for this purpose. Ministry of Information developed a digital way of communication in land lines system. Initially, a license was awarded to a cellular company named Paktel to develop this business. Later on, Government gave license to MOBILINK, first GSM company. In Gen Pervaiz Musharraf's regime, the pace of development was accelerated and three more cellular companies named of UFONE, TELENOR and WARID were awarded licenses. All these three companies were foreign-origin and in this way a competitive environment was created in telecommunication sector.

Present Government auctioned 3G and 4G license for high speed internet service with the use of modern communication techniques. Now electronic media is playing very important role in the development of new trends in fashion and in living standards.

New generation considers cell phone as a basic necessity like water, air, clothes and food. It is also changing our habits. Now we don't want to post a card or letter to our near and dear ones we just want to do a SMS or MMS. We don't want to have chatted physically but we want to have thousands of friends through social media. We don't want to go physically to see the elders or patients but we want to keep in touch with them through cell phone. People are considering that they are available at all times, and physical presence doesn't matter.

b) Main research question

Our main research question is to study "The impact of cellphone on Pakistani culture and what types of changes so far have been taken place in Pakistani society?"

c) Problem Statement

Today people in Pakistan typically and youngster especially cannot feel complete without having cell phone in their pockets or in bags. In indicates the change being taken place in our habits during last two decades. It is the main focus of our study.

d) Objective of study

The objective of this study are given below: -

1. To find out the positive and negative impact of cellphone on Pakistan's society and culture.
2. To study the changes being taken place in our cultural norms in our society due to the use of cellphone.

e) Scope of study

The likely impact of this study is very wide because cellphone is being used all over the world and it has become a vital need to obtain required information Our results will not only be beneficial for the future researchers but also for the cellular companies as well as for the governments to frame their policies

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accordingly. It also helps reduce the negative effects of cellular phone. Thus, the impact of this study will be very vast.

II. Conceptual Framework

Culture means shared values. It provides us very beneficial directions to set our objective, normally we can distinguish two persons' culture by observing their actions and conversations. Culture has a great impact on norms and ethic. Now we can feel that most of the cultures have been changed over a period of time.

a) Definition of Marketing

Definitions are required to attain two exceptional effects. Firstly, these can serve as a gauge to provide understanding and sense to the subject-matter so that a frame of reference may be expressed where further discussions can be carried out. Secondly, once a common framework has been established, this can help to restrict unnecessary deviances.

Philip Kotler, a world's leading authority in business research, has defined marketing as "A social and managerial process by which individuals and groups can attain what they want according to their need and desire"

The American Marketing Association (AMA) defines marketing as "the performance of business activities that direct the flow of goods and services from producer to consumer or user (AMA, 1965).' The UK Institute of Marketing defined marketing as "the management function which organizes and directs all those business activities that involved in assessing and converting customer purchasing power into effective demand for a specific product or service, and in moving the product or service to the final consumer or user so as to achieve the profit target or other objectives set by a company (Institute of Marketing, 1965)".

b) Definitions of culture

According to different schools of thought:

"Culture is the sum of awareness, practice, faiths, standards, approaches, senses, orders, belief, ideas of time, characters, three-dimensional relations, ideas of the universe, and measurable items and belongings learned through a specific number of people in the sequence of peers by distinct and collective struggling. A culture is the customs of a group of people and their activities, opinions, values and codes that they obtain, typically unconsciously and that are accepted with declaration and imitation from one generation to the next generation.

Awan and Wahla (2014) says that culture is symbolic declaration. Some of its signs comprise a combine ability, awareness, approaches, standards and objects. The senses of the signs are knowledgeable and intentionally spread in the social order by its traditions. Culture is the aggregation of well-informed actions of a group of people that are normally redirected to be the tradition of that people and are conveyed from one age group to another age group.

c) Change in culture

According to different anthropologists every culture alters with spell. No culture is stationary. On the other hand, most cultures are primarily customary in such a way to repel modification. Few struggle additional than others by acknowledging rules for the fortification of normal cultural forms while setting up obstacles to strange ideas and things. For instance, the government of France has banned the saleable use of English words while there are French words available that can be used equivalencies. This is a reaction particularly to the widespread use and popularity of terms such as "sandwich" and "computer" among young people. In contrast, some cultures are extremely open to some kinds of change. Over the last two decades, the People's Republic of China has been rapidly adopting western technology and culture in everyday life. This can be seen in their wide acceptance of everything from cell phones to American television shows and fast food. McDonald's has already established 560 outlets in China and soon will be adding 100 more. The same thing is being taken place in Pakistan where foreign brands are pouring in the market and changing behavior of Pakistani customers.

III. Research Methodology

a) Research Design

In this study we have determined to examine the effect of cellphone on habits of people particularly youth and ethics of the society. We directed this effort in normal setting and collected data from a sampling population. The unit of sampling is all kind of peoples from all walks of life.

b) Data and Type

We used both secondary and primary data. But we mainly focus on collection of primary data because it provides us more accurate information to find out the desired result.

c) Sample and size

We take a sample of target population randomly and the size of our sample is 206 respondents. These respondents were contacted personally and a structured questionnaire was distributed among them. The geographical area of study was Multan region.

d) Proposed Model

The proposed model of our study is shown in Figure 1, which shows two independent and dependent variables. We have to measure the impact of independent variable on dependent variable. The proposed model is shown in Graph 1.

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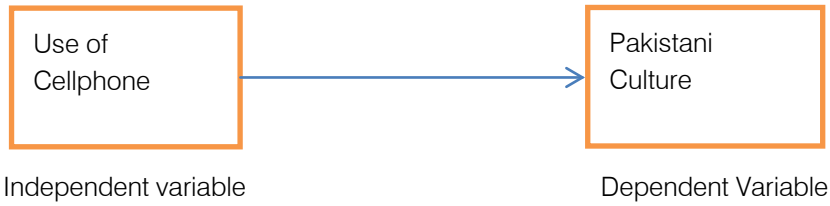


Figure 1: Impact of Cellphone use on Pakistan's culture

e) Estimation Techniques

We used multiple regression method a to measure the impact of independent variable on dependent variables. We also used Likert Scale to measure the attitude of respondents about the benefits and negative effects of the use of cellphone. We draw empirical results through SPSS software.

f) Hypothesis Formulation

In this study, we try to identify the factors that cause change in the culture of educated and none educated people of Multan region. We formulated two hypotheses for our study. These two hypothesis are as under:-

H_0: Is there a positive relationship between cellphone and cultural change.

H_1: Is there a reverse relationship between use of web based applications and cell phones.

g) Selected Variables

Our selected variables are the followings: -

1. Voice call.
2. Short message service.
3. Face book.
4. Whatsapp
5. Adult websites.

The selected variables and their description are given in Table 1.

Table 1: Variables and its description

Variables	Description
Dependent variable	
Culture	1. You or another member of your family use cell phone.
Independent variables	
Cell phone	1. One tries to use voice call packages. 2. One tries to use SMS packages. 3. One tries to use internet packages. 4. Each consumer's behavior can have an impact on the culture.
Comfort	1. Rapid reduction in prices of smart phone gadgets. 2. One could generally buy the least priced commodity conversely a customer valued its impression on his area of concern.
Lack of information	1. One has reservations for the real modules of cell phone gadgets. 2. One may not confirm about the true packages of a company .

h) Data analysis Technique

i. *Descriptive Statistics*

In this study we used basic statistical and descriptive analysis for recognizing the respondent's demographic characteristics.

ii. *Reliability Analysis*

We applied reliability test to measure the reliability of data.

IV. Data Analysis

The objective of this study was to analyze the impact of the use of cell phone on Pakistani society. For this purpose, we constructed a questionnaire and distributed among 2006 respondents of different categories. The data was collected through survey methods. Out of 2006 questionnaires, which got filled from the respondents, 175 were found correct and included in the analysis. The data was analyzed and results were drawn through SPSS software. The detail of results and their brief descriptions are given in the tables and Figures given below:-

a) Demographic statistics

The demographic characteristics of sampling population are given below:-

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Table 2: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	66	32.0	32.0	32.0
	Male	140	68.0	68.0	100.0
	Total	206	100.0	100.0	

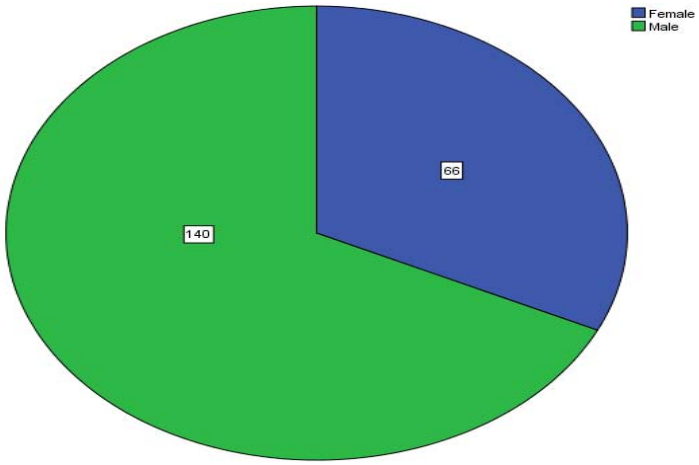


Figure 2: Gender

Table and Figure 2 presents the demographic statistics of respondents of the study. It shows that 140 respondents were male and 66 were female from total sample of 206.

Table 3: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16-25	137	66.5	66.5	66.5
	26-35	52	25.2	25.2	91.7
	36-above	17	8.3	8.3	100.0
	Total	206	100.0	100.0	

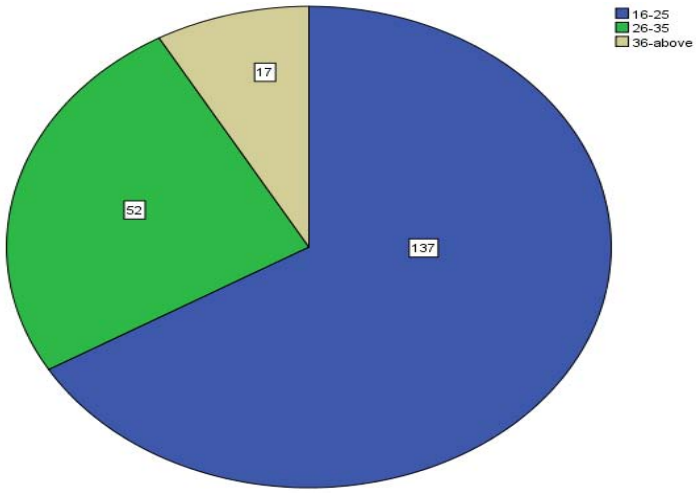


Figure 3: Age

Table and Figure 3 reflect the ages of respondents of the study. They show that 137 respondents were aged between 16 to 25 years, 52 were aged between 26 to 35 and17 were aged above 36 years.

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Table 4: Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	152	73.8	73.8	73.8
	Married	48	23.3	23.3	97.1
	Divorce	3	1.5	1.5	98.5
	Widowed	1	.5	.5	99.0
	Separated	2	1.0	1.0	100.0
	Total	206	100.0	100.0	

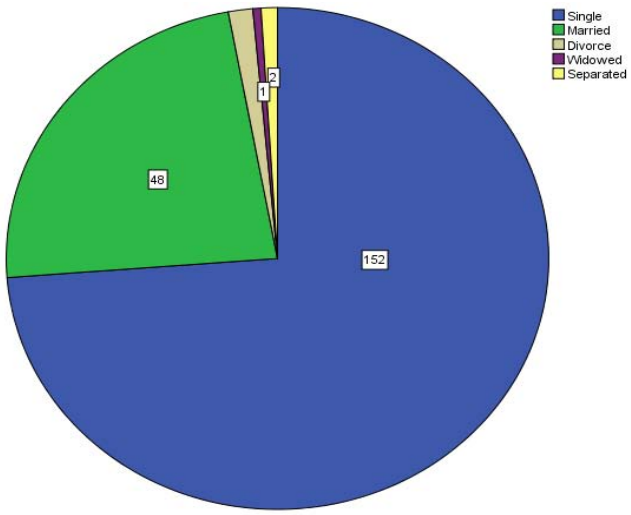


Figure 4: Marital Status

Table and Figure 4 presents the marital status of respondents of the study. These show that 152 respondents were singles, 48 were married, 3 were divorced, one was widowed and 2 were separated.

Table 5: Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	114	55.3	55.3	55.3
	Business	21	10.2	10.2	65.5
	On Job	71	34.5	34.5	100.0
	Total	206	100.0	100.0	

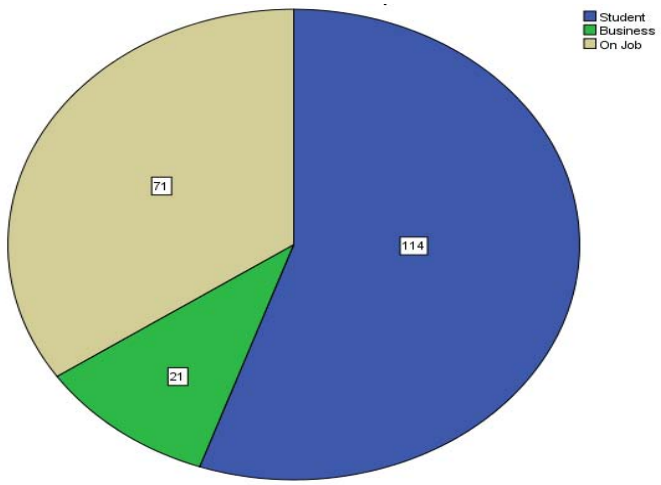


Figure 5: Occupation

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Table and Figure 5 highlights the occupations of respondents and they show that 114 respondents were students, 21 were business persons and 71 were employees.

Table 6: Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Matric	7	3.4	3.4	3.4
	Bachelors	77	37.4	37.4	40.8
	Masters	120	58.3	58.3	99.0
	M-Phil	2	1.0	1.0	100.0
	Total	206	100.0	100.0	

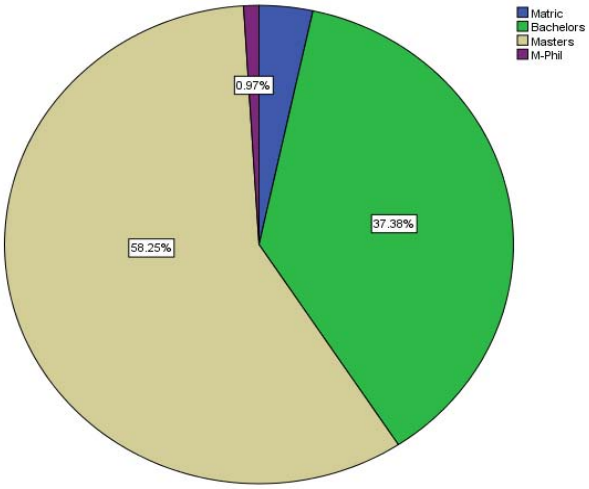


Figure 6: Education

Table and Figure 6 presents the Educational status of respondents and they show that 7 respondents were matriculate, 77 were bachelors, 120 were having post graduate qualifications, and two among them were M.Phil./ MS.

Table 7: Network Used

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mobilink	66	32.0	32.0	32.0
	Ufone	77	37.4	37.4	69.4
	Warid	15	7.3	7.3	76.7
	Zong	35	17.0	17.0	93.7
	Telenor	13	6.3	6.3	100.0
	Total	206	100.0	100.0	

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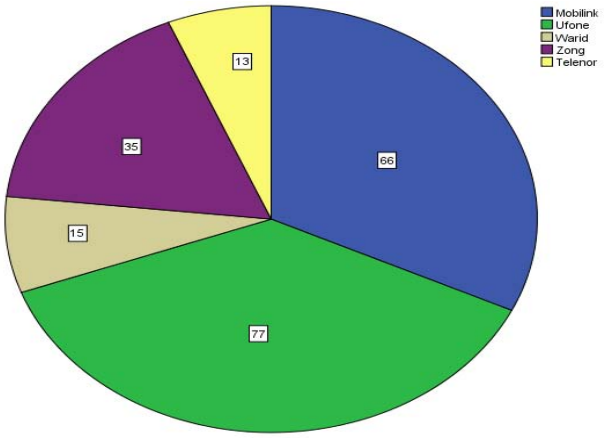


Figure 7: Network used

Table and Figure 7 presents the networks used by the respondents and they show that 66 respondents were using Mobilink , 77 used Ufone, 15 used Waried, 35 used Zong and 13 were used Telenor

Table 8: Cell Phone Company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Samsung	71	34.5	34.5	34.5
	IPhone	34	16.5	16.5	51.0
	Q-Mobile	34	16.5	16.5	67.5
	Nokia	54	26.2	26.2	93.7
	Huawei	12	5.8	5.8	99.5
	Rivo	1	.5	.5	100.0
	Total	206	100.0	100.0	

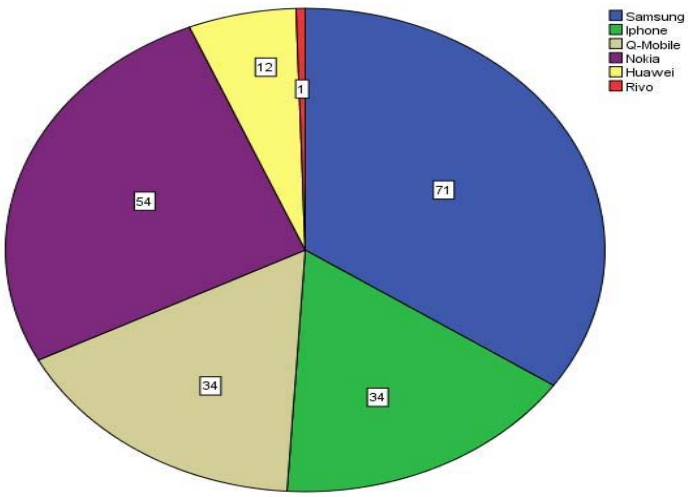


Figure 8: Cell phone company

Table and Figure 8 presents the cell phone sets used by the respondents of the study they also reveal that71 respondents were using Samsung, 34 used I phone, 34 used Qmobile, 54used Nokia, 12 used Huawei and one was using Rivo

b) Analysis of the views of respondents

The questionnaire contains total 25 questions. The answers of each question was sought from selected respondents. The response of important questions are shown in the tables and Figures step by step. The brief analysis of the answers of each question is given below:

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Q.1 How long are you using the cell phones? The answers of the respondents are given in Table 9

Table 9: Period of using cell phone by the respondents.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 year	15	7.3	7.3	7.3
	Less than 2 years	7	3.4	3.4	10.7
	less than 5 years	43	20.9	20.9	31.6
	less than 10 years	103	50.0	50.0	81.6
	less than 15 years	26	12.6	12.6	94.2
	More than 15 years	12	5.8	5.8	100.0
	Total	206	100.0	100.0	

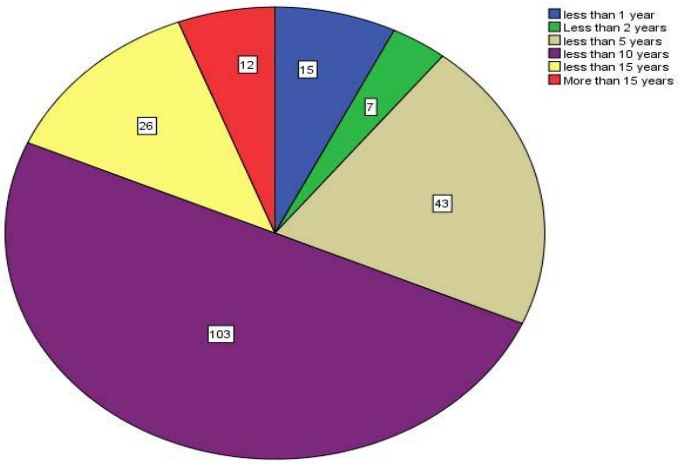


Figure 9: Period of using cell phone by respondents

Table 9 as well as Figure 9 presents the history of cell phone use by the respondents, which indicate that that 15 respondents were using cell phone for less than one year, 7 less than 2 years, 43 less than five years, 103 less than 10 years 26 less than 15 years, and 12 were used more than 15 years

Table 10: Monthly spending on cell phone use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-500	90	43.7	43.7	43.7
	500-1000	47	22.8	22.8	66.5
	1000-2000	28	13.6	13.6	80.1
	2000-Above	41	19.9	19.9	100.0
	Total	206	100.0	100.0	

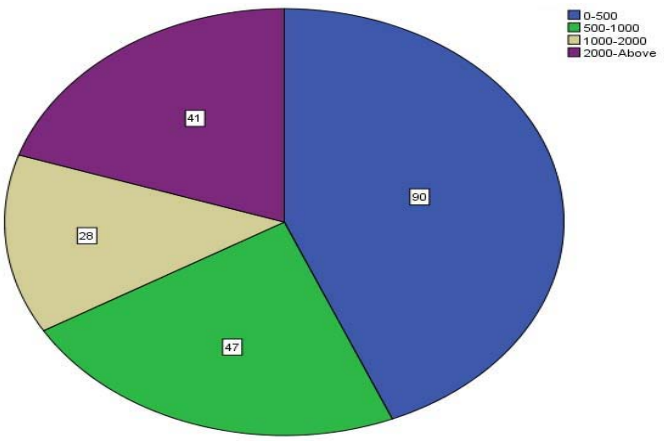


Figure 10: Monthly expenditures on cell phone use

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The data given in table 10 and Figure 10 show the monthly expenditure of respondents on cell phone use. The data show that 90 respondents were spending less than 500 rupees monthly on cell phone, 47 less than 1000 rupees, 28 less than 2000 rupees and 41 were spending more than 2000 rupees.

Q.3 How much do you talk daily? The answers of the respondents are given in Table 11.

Table 11: Daily time consumption of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 hour	114	55.3	55.3	55.3
	Less than 2 hours	32	15.5	15.5	70.9
	Less than 3 hours	23	11.2	11.2	82.0
	above 3 hours	37	18.0	18.0	100.0
	Total	206	100.0	100.0	

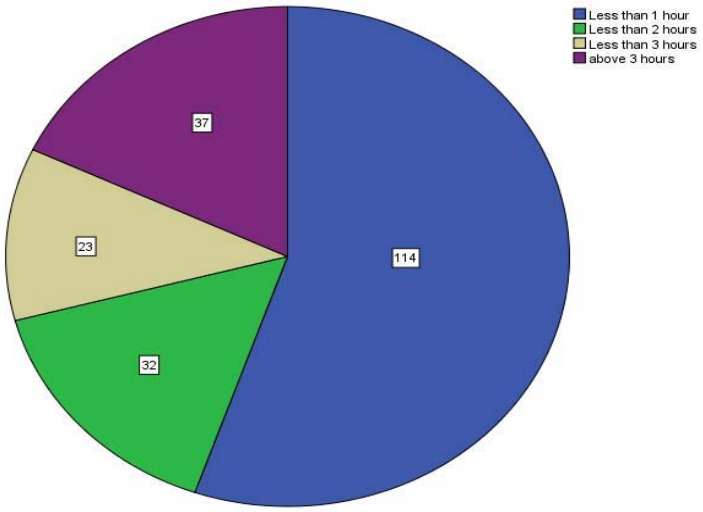


Figure 11: Daily consumption of time in cell phone use

The data given in Table 11 and Figure 11 reveals how much time the respondents are spending while using cell phone. The data show that 114 respondents were spending less than 1hour daily, 32 less than2hours, 23 less than 3 hours and 37 were spending more than 3 hours.

Q.4 How many Opposite gender friends you made through cell Phones? The answers of the respondents are shown in Table and Figure 12.

Table 12: Number of social networking among opposite sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-10	187	90.8	90.8	90.8
	10-50	9	4.4	4.4	95.1
	50-100	5	2.4	2.4	97.6
	Above	5	2.4	2.4	100.0
	Total	206	100.0	100.0	

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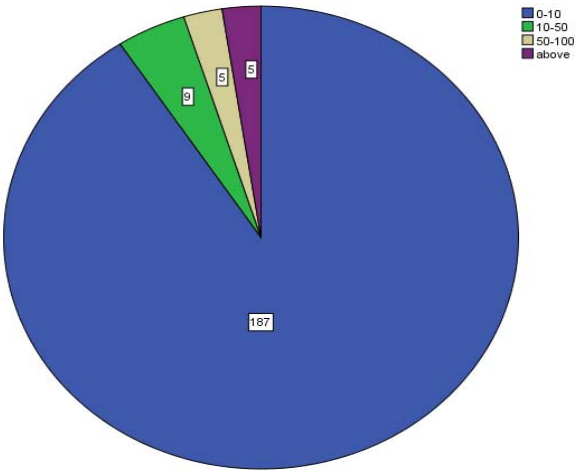


Figure 12: Number of social networking among opposite sexes due to cell phone

Table and Figure 12 presents the making of opposite gender friends through cell phone. The data show that 187 respondents made friends less than 10, 9 less than 50 friends, 5 less than 100 friends and 5 were made above 100 friends.

Q.5 Do you use SMS Packages? The answer of the respondents are given in Table and Figure 13.

Table 13: Use of SMS packages

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	29	14.1	14.1	14.1
	Yes	177	85.9	85.9	100.0
	Total	206	100.0	100.0	

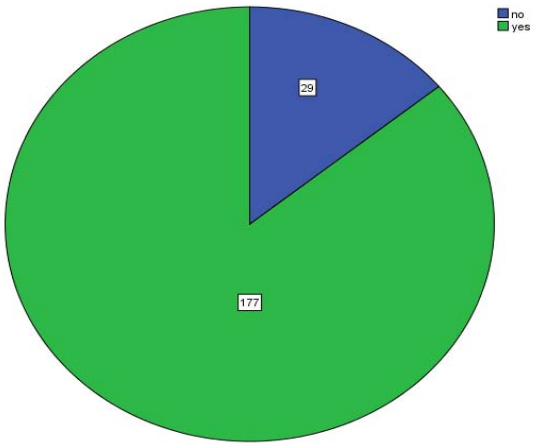


Figure 13: Use of SMS package?

Table and Figure 13 show the usage of short message service packages through cell phone. Data show that 29 respondents were not using the SMS packages while 177 were using the SMS packages.

Q. 6 Do you Text Sentimental SMS? The answers of the respondents are given in Table and Figure 14.

Table 14: Detail of sentimental communication among respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	110	53.4	53.4	53.4
	Yes	96	46.6	46.6	100.0
	Total	206	100.0	100.0	

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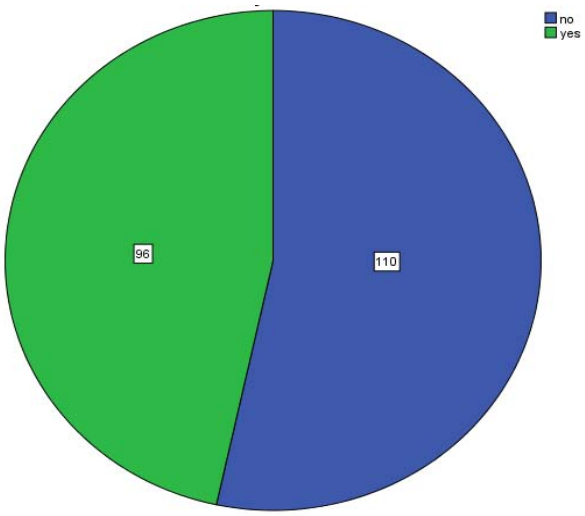


Figure 14: Detail of sentimental communication among respondents

Table and Figure 14 presents the usage of sentimental SMS. The data show that 110 respondents were not sending the sentimental SMS while 96 were sending the sentimental SMS.

Q.7 Do you use Internet Packages on Cell Phone? The responde of the respondents are given in Table and Figure 15.

Table 15: Use of internet packages on cell phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	72	35.0	35.0	35.0
	Yes	134	65.0	65.0	100.0
	Total	206	100.0	100.0	

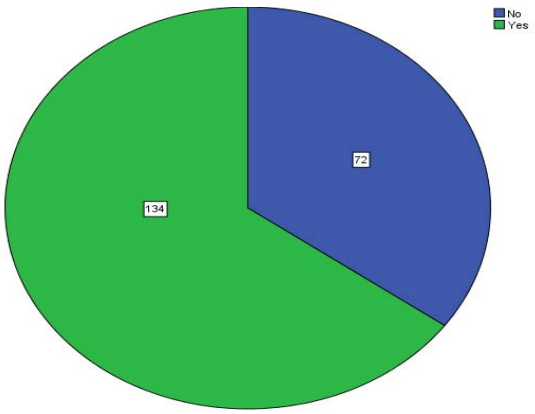


Figure 15: Use of internet packages on cell phone?

Table and Figure 15 presents the usage of internet packages through cell phone. They highlight the fact that 72 respondents were not using the internet packages while 134 were using the internet packages.

Q.8 Do you Like to use Facebook on Cell Phone? The answer of the respondents are given in Table and Figure 16.

Table 16: Use of Face Book on cell phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	55	26.7	26.7	26.7
	Yes	151	73.3	73.3	100.0
	Total	206	100.0	100.0	

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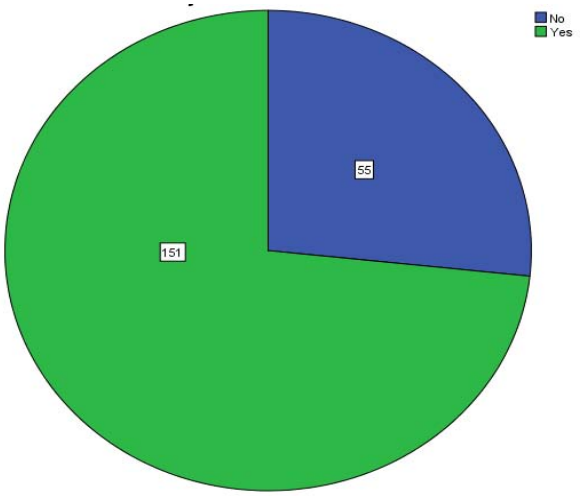


Figure 16: Use of Face Book on cell phone?

Table and Figure 16 presents the usage of Facebook through cell phone. As many as 55 respondents told that they were not using the face book while 151 told that they were using the face book on cell phone. It means majority of respondents use face book through cell phone and it is proved that cell phone is a very useful tool to use face book. It reduces the need of computer for the same purpose.

Q. 9 How many Facebook Friends do you have? The answer of the respondents are given in Table and Figure 17.

Table 17: Social networking through Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 100	96	46.6	46.6	46.6
	less than 200	30	14.6	14.6	61.2
	Above	80	38.8	38.8	100.0
	Total	206	100.0	100.0	

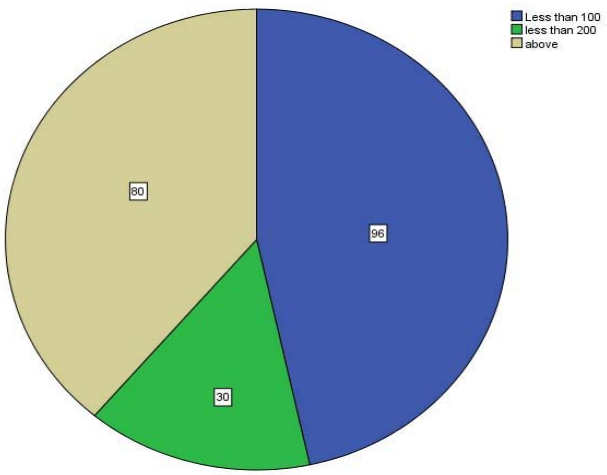


Figure 17: Social networking through Facebook

Table and Figure 17 presents the number of face book friends. According to data 96 respondents had less than 100 FB friends, 30 had less than 200 FB friends while 80 respondents had more than 200 FB friends.

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Q.10 Do you have more Friends Girls or Boys? The answers of the respondents are given in Table and Figure 18.

Table 18: Ratio of male and male friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Boys	128	62.1	62.1	62.1
	Girls	78	37.9	37.9	100.0
	Total	206	100.0	100.0	

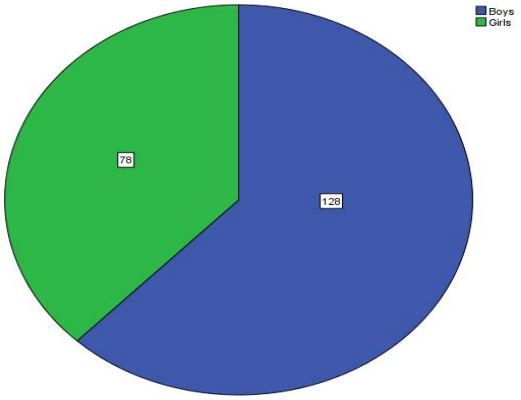


Figure 18: Ratio of male and female friends

Table 18 presents the tendency of friend's gender which they had made through face book. The data shows that 128 respondents had more boys friends while 78 respondents had more girls friends.

Q. 11 Do you have any experience to meet any unknown friend physically? The answer of the respondents are given in Table and Figure 19.

Table 19: Physical meeting of unknown persons connected through cell phone.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	153	74.3	74.3	74.3
	Yes	53	25.7	25.7	100.0
	Total	206	100.0	100.0	

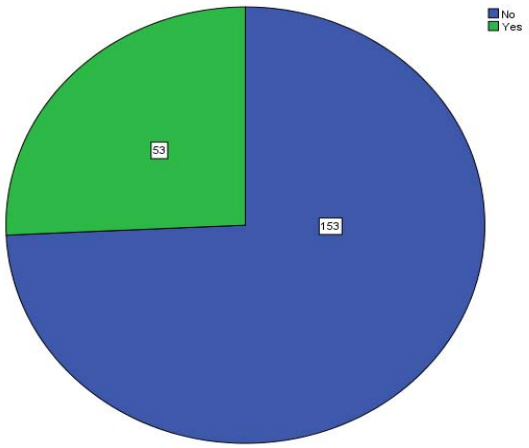


Figure 19: Physical meeting of unknown persons connected through cell phone.

Table and Figure 19 presents the experience to meet unknown friends. The empirical data show show that 153 respondents had no experience while 53 respondents had experience to meet unknown male and female friends having got acquaintance through cell phone.

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Q.12 Do you browse adult websites? The answer of the respondents are given in Table and Figure 20.

Table 12: Browsing of adult websites through cell phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	140	68.0	68.0	68.0
	Yes	66	32.0	32.0	100.0
	Total	206	100.0	100.0	

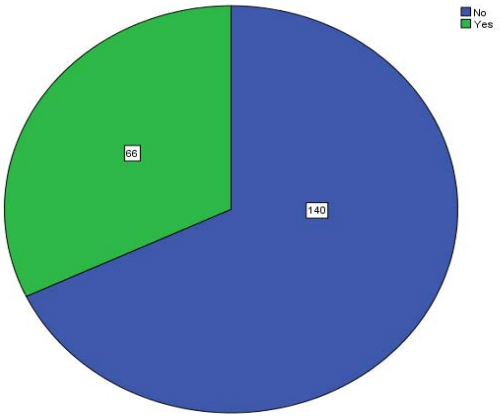


Figure 12: Browsing of adult websites through cell hone

Table 20 presents the data of the use of Adult web sites which show that 140 respondents did not browse Adult web sites while 66 respondents did browse the Adult web sites. It means that the certain ratio of respondents is browsing adult websites on cell phone and it indicates its misuse. These results must attract the attention of policy makers to take proper measures to stop such misuse particularly by the youth.

Q.13. How often you visit adult sites? The answers of the respondents are given in Table and Figure 21.

Table 21: Frequency of visiting adult websites by cell phone users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weekly	18	8.7	8.7	8.7
	Daily	14	6.8	6.8	15.5
	No Idea	174	84.5	84.5	100.0
	Total	206	100.0	100.0	

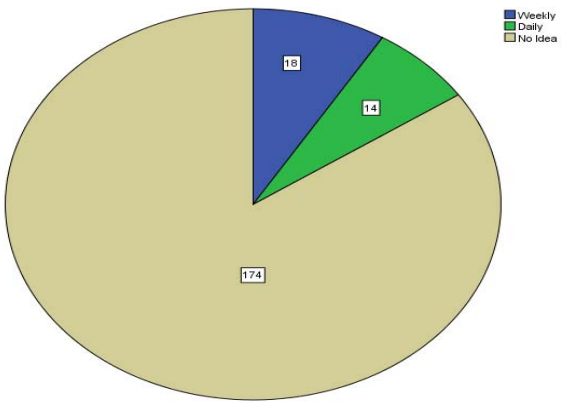


Figure 21: Frequency of visiting adult websites by cell phone users.

Table and Figure 21 show the frequency of browsing Adult websites. The evidence shows that 14 respondents browse daily, 18 browse weekly while 174 respondents had no idea.

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Q. 14 Do you live without your cell phone easily? The response of the respondents are shown in Table and Figure 22.

Table 22: Necessity of cell phone for respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	128	62.1	62.1	62.1
	Yes	78	37.9	37.9	100.0
	Total	206	100.0	100.0	

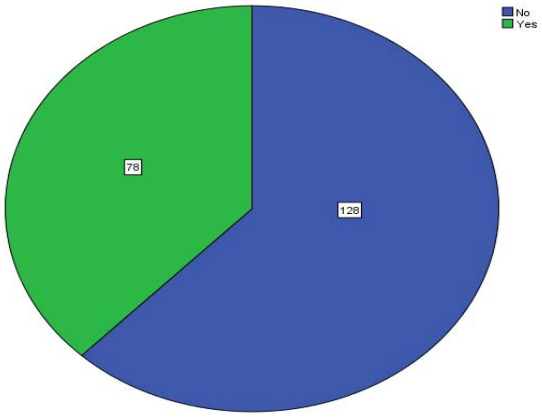


Figure 22: Necessity of cell phone for respondents

Table and Figure 22 show how many persons can live without cell phone? The data shows that 128 respondents could not live without cell phone while 78 respondents could live without cell phone. It means cell phone has become necessity for majority of sampling population.

Q. 14 Do you think that cell Phone brings change in your Life? The answer of the respondents are given in Table and Figure 23.

Table 23: Change in lifestyle due to cell phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	39	18.9	18.9	18.9
	Positive	136	66.0	66.0	85.0
	No Change	31	15.0	15.0	100.0
	Total	206	100.0	100.0	

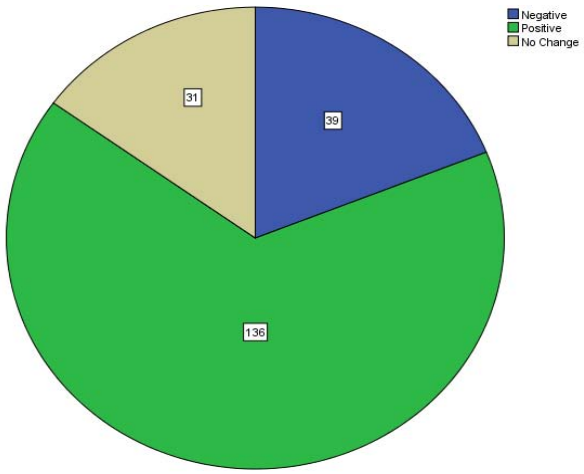


Figure 23: Change in lifestyle due to cell phone

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Table and Figure 23 presents the changes that bring due to cell phone in the lives of respondents. The empirical evidence shows that 39 respondents consider negative change, 136 respondents consider positive change while 31 respondents consider no change. It means that majority of respondents reveal that cell phone has brought positive change in their lives

V. Findings and Results

Our Empirical results suggest that both the genders male and female are using the cell phones on daily basis, but their intensity is vary from person to person. The evidence shows that educated subscribers of Multan region are more involved in the use of cell phone. This finding is consistent with the finding of previous studies of (Townsend, 2000) and (Rosen, 2004). In our study, we find that people are feeling good to have friends of opposite gender. This is quite alarming especially for a society (Pakistani) which does not like it. This finding is consistent with the study of (Agre, 2001).We also found that people from all walks of life are using short messaging services (SMS) in such a way they are using all kind of messages from funny to erotic and from sentimental to vulgar. Even they are using MMS. Our this finding is consistent with the earlier studies of Kakabadse, Kakabadse, Bailey & Myers (2009). We noted during the study that 95 percent of students reported having access to a computer/laptop, mobile phone and internet. Approximately 17 percent of students told that they spent at least three hours per day on a mobile phone. The majority of students revealed that they sent and/or received 20 text messages daily. Only five percent of students sent or received over 60 texts daily. Out of the students who sent or received text messages, 29 percent used text short cuts when completing school work. As many as 65 percent to students told that they use internet on their cellphones. This finding supports the study of Kakabadse (2009). It was also noted that people can now conduct banking, check sports scores and stocks, read news, watch YouTube videos, play games, find directions and maps, book travel plans, and search information at the touch of a button – from anywhere. The boundaries of activities and locations are becoming blurred. The data shows that 73.3 percent respondents use Facebook and having links with their male and female friends. They want to see and meet their FB friends physically as well. This thing indicate a great change in our culture. Similarly, 77 percent respondents use WhatApp on their cell phone even in the presence of their friends and relatives. This is also an indication of cultural change because in our culture which is a combination of east advise us to give great respect to elders and guests. But due to use of magical gadget (Cell phone) people feel no hesitation to use it publicly. We have asked to our respondents whether they are browsing adult websites on their cell phones. On this question, most of them become confused and hesitated to reply. Some felt shyness and some boldly reply yes they love to browse such sites frequently.

VI. Conclusions

The above discussion highlights the fact that cell phone has become the basic need of people and they use it widely for exchanging information, feeling and new ideas. It has been bringing a dramatic change in our habits, thinking, ideas and behaviour. There are a long of benefits of using cell phone that including being connected with the friends, families, colleagues and fellows 24 hours and now the availability of the people are no problem. Now they can be reached immediately. It has made our lives and inter-communication more convenient and less costly. Now we can talk to our relatives living in the United States, Canada, United Kingdom and Gulf countries easily without time and money constraints because the cost of cell phone calls are very low. However, it has also brought negative impact on our society particularly youth. Now they are opting habits of western youth and wasting their precious time on immoral activities. This is against our cultural values, which give us an edge over western societies.

VII. Recommendations

1. Cultural issues are mostly complex in nature and hardly involve simple answers. Subscribers are often poorly informed about services which they can avail by their cell phones even if they are interested in ecologically and socially responsible consumption. The greatest hazard is the lack of information availability and its true marketing.
2. Subscribers are currently bombarded by information and pictures about the different areas, which is difficult for a company's message to communicate. Information overloading among customer's impact nothing positive.

VIII. Practical Implication

Strategy creators, marketers, executives and anthropologist can get help by this research for recognizing the segments (i.e. people of Multan region) for the campaign of cell phones features. Strategy creators, marketers and executives can make strategy that follows the conduct of educated consumers for buying and use of communications products. Marketers and executives can expand the sale of their companies by using figural example of educated segment of Multan region.

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IX. Future Research

The current work represents the impact on cultural and behavioral changes over period of time with the use of cell phones. Though, there is requirement of thorough research about the concerns, present work only deliver basis for future research. Cultural change studies have recommended for examining each part of behavior of diverse areas of consumers (i.e. family composition, requirement and social role and position). Upcoming research may discover element of each interactive facet of usage purpose.

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DRAFT: Myanmar's Media Essential for Myanmar's Reforms

By Trevor Wilson

Australian National University

Background- The history of journalism in Myanmar makes fascinating reading and could be instructive in assessing the country's political transition if freedom of the press takes root and prospers. Progress toward press freedom has occurred very rapidly in Myanmar since 2012, but we still see too many instances of journalists being detained and even charged over what they have published.Any comments here about the courage and political instincts of Myanmar's media, are largely based on reading English-language Myanmar media. Nevertheless, it is obviously possible to observe what Myanmar journalists are writing – even from a slight distance – and still be impressed by how valuable and reliable the best Myanmar journalism is. But, not surprisingly, there is also some Myanmar journalism which is not so impressive, as happens with journalism in any country.

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DRAFT: Myanmar's Media Essential for Myanmar's Reforms

Trevor Wilson

I. Background

The history of journalism in Myanmar makes fascinating reading and could be instructive in assessing the country's political transition if freedom of the press takes root and prospers. Progress toward press freedom has occurred very rapidly in Myanmar since 2012, but we still see too many instances of journalists being detained and even charged over what they have published.Any comments here about the courage and political instincts of Myanmar's media, are largely based on reading English-language Myanmar media. Nevertheless, it is obviously possible to observe what Myanmar journalists are writing – even from a slight distance – and still be impressed by how valuable and reliable the best Myanmar journalism is. But, not surprisingly, there is also some Myanmar journalism which is not so impressive, as happens with journalism in any country.

Despite Myanmar's long history of government-controlled media, Myanmar society always accorded its writers great respect because they clearly sought to influence and improve attitudes to public policy. Under decades of military rule, a few "anonymous" commentators wrote opinion pieces regularly in the Myanmar media. Their courage in acting as thoughtful commentators was obvious, even if they were often writing "anonymously" under a "nom de plume". During the State Peace and Development Council (SPDC/SLORC) period (1988-2011), a small number of very professional Myanmar journalists worked as analysts for international media agencies, such as Reuters, Associated Press and the *Nihon Keizai Shimbun*. They acted as modern-day commentators, not unlike their erudite predecessors. Although only heavily veiled criticisms of the government were permitted, these were well understood by Myanmar readers. Overall, the professional benefits that the Myanmar "stringers" gained from their experience of writing for the major wires services over several years should not be overlooked, as the experience involved considerable inter-action about journalistic judgment, international media expectations, as well as the ethics of reporting about Burma/Myanmar.[1]

This did mean that Myanmar's media was not entirely isolated, and not immune from many of the media trends that developed internationally over the years. In some ways, even "routine" reporting of events and developments today by Myanmar journalists continues this tradition of independent commentary. Moreover, the practice of "citizen reporting" that developed at the time of the "Saffron Revolution" thanks to technological improvements, also continues but some of the practitioners of this style of reporting demonstrate limited understanding of some journalistic "rules", such as verifying statements and claims, and being more questioning of critics of the government. (However, obtaining government corroboration of community challenges is often still almost impossible to do.)

However, the overall Myanmar media environment until 2011 was generally complicated and certainly did not guarantee free contesting of ideas. U Pe Myint, now the Minister of Information, warned about the pitfalls of excessively cautious "self-censorship" when he attended the 2011 Myanmar Update conference at Australian National University.[2] At that time, U Pe Myint was editor-in-chief of the private weekly journal, the *People's Age*. Others, such as the former *Myanmar Times* journalist Ma Nwe Nwe Aye have pointed out the valuable role that an open media can play in countries like Myanmar in combating corruption, or in raising public awareness and protecting political integrity in other meaningful ways.[3]

The Thein Sein government's relaxation of print censorship has been a turning point, albeit a partial step, although it did not take effect until early 2012. It was never intended to be full relaxation of censorship,

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[1] In addition to Reuters, Associated Press, and the Nihon Keizai Shimbun, the international media agencies covering Burma/Myanmar regularly included Agence France Presse (AFP), Jiji Press and Kyodo News Agency from Japan, as well as eminent international broadcasters such as the BBC and VOA.

[2] See his innocently titled "The Emergence of Myanmar Weekly News Journals and their Development in Recent Years" in *Myanmar's Transition: Openings, Obstacles and Opportunities*, (ed. by Nick Cheesman, Monique Skidmore and Trevor Wilson, Singapore: Institue of Southeast Asian Studies, 2012.

[3] See her chapter on "The Role of the Media in Myanmar: Can it be a Watchdog for Corruption?" in *Myanmar's Transition,* (op. cit).

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and some other important forms of media, such as broadcast media and social media, still experience very high levels of government censorship and control. A freer media is critical to Myanmar's political transition, but arguably the time for more responsible journalism by Myanmar journalists may also have arrived. In most countries, journalists themselves are equally subject to scrutiny, but this does not seem to happen very much in Myanmar. It seems that Myanmar journalists are assumed to be correct when they report news, regardless of their experience and ability. Nowhere else in the world would such "infallibility" on the part of journalists be presumed. Since there is no formal ethical code of conduct for Myanmar journalists, can readers be sure that a Myanmar journalist is being truthful, or that in a sensitive situation a Myanmar journalist was behaving ethically?

Another phenomenon of the media in Myanmar today seems to be the willingness of local journalists to accept criticism of the government uncritically. This is probably not surprising, given the history of government control and the lack of trust that developed as a consequence, as well as the incipient nature of a freer press. Journalists working in Myanmar also may not be able readily to obtain clarification of government positions, while it is also true that law enforcement by the authorities in Myanmar is often frivolous and is pursuing another, "higher" political agenda. In this situation, greater mutual restraint by both sides in Myanmar may help nevertheless. The authorities should refrain from responding with excessive force against protesters. And journalists anywhere must exercise care about the motives behind any action they report, and remember their responsibility to verify the truth, rather than to repeat unsubstantiated information, particularly in highly sensitive areas such as national security. The decision to disclose information must be made judiciously, keeping in mind both the public interest and the reliability of sources.

In countries like Australia, a range of formal, legal protections exist which, while not always perfect, go a long way to ensuring the overall system operates fairly. For example, we have strong defamation laws to protect individual reputations (typically not used for other purposes by any government). We also have "whistle-blower protection" laws, which allow abuses of authority to be challenged without the discloser of the information being unfairly penalised. Australia also has a system of legal aid for those who would not normally be able to afford a lawyer and the costs of mounting a lawsuit, and arrangements through an independent Press Council to ensure media reporting is not mischievous, destructive or in some way unreasonable. Complaining to the Press Council would normally be a last resort, and not often used. Myanmar's decision to establish a press council may be welcome, but it will probably not be fully effective on its own. It would need to be reinforced and complemented by a strengthened legal system offering alternative forms of protection, or redress; and it would need to be allowed to operate, and seen to operate, totally independently, otherwise, no one would see it as having any real power.

In many countries, defamation laws are strong and this can directly affect the way journalists work. However, defamation laws can also be used by the authorities for other purposes, for example, to restrict political commentary, to block adverse criticism, and to thwart the emergence progressive ideas. Since defamation laws need to be used carefully and in a balanced way, wider use of such laws is not always beneficial when a media environment is in any way vulnerable to political pressures.

II. How Problematic is the Lack of Media Freedom?

Myanmar certainly does not currently have a free press, although most international commentators acknowledge that some improvements in Myanmar's media landscape have taken place in recent years. Most criticism of Myanmar's lack of press freedom emanates from the United States, where campaigns for press freedom are very vocal and can be accompanied by a politically loaded agenda (such as "promoting democracy", "eliminating drug trafficking", or "countering terrorism"). However, it remains to be seen whether or not the high media freedom standards sought by monitoring agencies in Washington or the idealistic expectations of dedicated activist groups help substantively, given the political sensitivities one sees in countries like Myanmar. The Washington-based NGO "Freedom House" gave Myanmar a "Press Freedom score" of 73 (where 100 is worst) although it scored Myanmar much better (in the 20s) in certain fields. It summarized its 2015 assessment of Myanmar as follows: "After several years of reforms and improvements, conditions for the media in Myanmar grew worse overall during 2014." In regard to the political environment in Myanmar, Freedom House commented:

"Media outlets are able to cover political news with relative freedom, addressing topics that were once considered off-limits and scrutinizing the activities of the government and legislature. However, Burmese-language state media continue to avoid topics that could lead to criticism of the government or military, and interethnic tension remains a sensitive subject, especially with respect to Buddhists and Muslims."[4]

After 2012, several observers commented on the reverses experienced in Myanmar's media

[4] See the Freedom House website: https://freedomhouse.org/report/freedom-press/2015/myanmar

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freedom.[5]It was always clear that Myanmar's initial liberalization during the Thein Sein Government was confined to the print media, although this may have generated expectations of wider liberalization. But there was firm basis for thinking that liberalization would necessarily extend further at that time. Moreover, no single measure was introduced and no single policy decision taken that marked a change or reversal of the print media censorship relaxation policy. Some of these negative articles were written by writers who were not experts on Myanmar; some reports were based on previous allegations of chemical weapons production, which had already been discounted by experts; and some were published by activist organizations that were reluctant to accept that any liberalization had happened. It is also possible that some of the problematic articles, as far as the authorities were concerned, were written by less experienced journalists.

As for other outside assessments of press freedom, the activist NGO "Reporters Without Borders" ranked Myanmar a low 143 for 2016, with the comment that the government "seems to have opted for (closely) monitored freedom instead of the drastic censorship that was in effect until recently. So media that cover political subjects have a bit more freedom. The Burmese-language state media nonetheless continue to censor themselves and avoid any criticism of the government or the armed forces." (However, according to UNESCO, Myanmar has still not most ratified most of the international conventions relating to media standards.) While social media use has expanded very rapidly in Myanmar in recent years, censorship of social media by the authorities may have increased rather than easing. In social media, self-censorship continues, so it is not yet possible to say press freedom in Myanmar is improving overall as technological change proceeds.

III. Limited Capacity Building for Myanmar's Modern Media

Because of Burma's strong commitment to non-alignment after its independence in 1948, and because of its self-imposed isolation after 1962, media practitioners in Myanmar have had relatively little opportunity to be exposed directly to the operations of the "free press", as it is generally known. Myanmar journalists received comparatively little professional development training, which tended to reinforce certain cultural behaviours and perhaps strengthened their sense of independence. It is also notable that once Western sanctions were imposed on Myanmar after 1988, relatively few Myanmar journalists had the opportunity to receive training from foreign experts and foreign practitioners in journalism. Some of this training that did occur was, in effect, "training on the job", where foreign journalists had come to Myanmar to work alongside their Burmese colleagues. The best known example of this the work of the part-Australian owned "*Myanmar Times*" after 1999. Some of these foreign journalists who helped with training in journalistic skills and techniques were Australians who seemed to be both professional and dedicated instructors.

Another significant source of media training for journalists from Myanmar during the period of the military regime – that is, from 1988 – was specialist journalists' training provided overseas by international agencies which were committed to bringing democracy to Myanmar. The main international donor providing media training was the United States, which delivered this media training through (US) government and non-government channels. The US Government claims that even by 2014, training in basic media skills was provided to more than 400 Myanmar journalists.[6](USAID claims to have provided basic training for "more than 1,000"Myanmar "journalists"[7], but it hard to imagine that these people were really all working journalists.)

The leading capacity-building institution on the US Government side, was the United States' National Endowment for Democracy (NED), but substantial training was also provided by non-government organisations such as the Open Societies Foundations of George Soros. NED media training was especially targeted at ethnic groups, or women's groups, many of which were based outside Myanmar (many were in Thailand).The results of this training can be seen in the impressive amount of documentary reporting produced by ethnic media networks recording the conditions in ethnic regions and the abuses these groups suffered, mostly at the hands of the Myanmar Army. The anti-government character of this kind of reporting, compared to reporting emanating from journalists working inside Myanmar, is quite striking. NED funding for journalists can be tracked via NED Annual Reports, but OSF follows a policy of not disclosing publicly details of its specific grants. (Total US assistance to Myanmar in all fields since 2012 is more than US$500 million.)[8] NED Annual Reports also confirm the large amount of targeted technical

[5] For example, the article by Wai Moe "Burma Backslides on Freedom of the press", *Foreign Policy, 19 June 2015.* See: http://foreignpolicy.com/2015/06/19/burma-backslides-on-freedom-of-the-press/

[6] According to the State Department website, this training was to support Myanmar's democratic transition.

[7] "Overcoming Censorship to Build a Free Press in Burma",Josh Machleder, Senior Media Advisor, USAID. https://medium.com/usaid-2030/overcoming-censorship-to-build-a-free-press-in-burma-9d4770115675#.9dvkqf8l8

[8] State Department Fact Sheet, 9 August 2014.See: http://www.state.gov/r/pa/prs/ps/2014/230463.htm

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Japan was the only other bilateral donor which included media training in its technical assistance programs during the period of military rule, although much of the training was delivered by Japanese NGOs such as the Sasakawa Peace Foundation. A description of the Sasakawa course is available on the SPF website. According to the former Myanmar Times journalist who organised some of the Sasakawa training programs, the course were essentially practical, and would be followed by a period of working on probation at the Myanmar Times. Over the years, approximately 50-70 journalists would have been trained, most of whom continue to work as journalists. Many of the senior communications staff at UN agencies, NGOs, embassies and foreign companies got their start through these programs; others are researchers or academics; inevitably many others saw these programs as an opportunity to develop skills that could be applied across a range of sectors. (At that time, there were not many work and training opportunities open to young people.)[9]Other-wise, very little is known about the objective results of Japan's media training for journalists from Myanmar. (Japanese assistance, generally, is not renowned for its objective appraisals of what was achieved and what was not achieved.)

After 2011, under the Thein Sein Government, the intensity of international media training for Myanmar journalists increased. A few international agencies such as UNICEF, UNESCO, International Media Services, and International IDEA also provided in-country training for Myanmar journalists in specialised areas such as health, children, climate change and election reporting. Experienced Australian journalists working Myanmar applied for and received a small grant from UNESCO for further training. In early 2013 they conducted a six-week full-time program for about ten beginner/untrained journalists, who they were all subsequently offered internships in the newsroom. This was deemed "moderately successful".[10] Later, while another Sasakawa program occurred, it was judged more appropriate for such media training to take place in a formal setting, and by then new institutions were being set up in Myanmar for this purpose for the first time.Generally, the demand was for specialised training for people wishing to become journalists, rather than from people already working as journalists, who seemed to be happy "learning on the job". Nevertheless, graduates from such training courses, tended to start working as journalists and to remain in these jobs for some time. So the programs were neither wasted nor unrelated to the requirements of the work.

The Australian Broadcasting Corporation (ABC) is one of the few government-funded foreign news agencies to have conducted media training in Myanmar, in its case for its "counterpart" Myanmar-government owned Myanmar Radio & Television (MRTV). (Voice of America also has a formal agreement with MRTV, and Japanese and Chinese state-funded agencies provide assistance to Myanmar as well.) Using its experience as a broadcaster with a clear national "mission" to help rural listeners, or young listeners, and to promote the arts, the ABC and MRTV signed a Memorandum of Understanding in 2013 under which the ABC provided specialist programming and other technical training for MRTV staff. It should be remembered that this Myanmar/Australia inter-action was not exactly collaboration between comparable organisations; the ABC has always been politically neutral in a way the MRTV could not have been.

There was no formal study course for journalists in Myanmar until the period of the Thein Sein government (2011-16).The Myanmar Journalism Institute[11] opened in Yangon in July 2014 with the International Media Support (IMS) group providing a viable organizational structure, a three-year strategic plan and input to the curriculum.[12]IMS works with media in countries affected by armed conflict, human insecurity and political transition across four continents. It has been active in Myanmar since 2006, initially supporting exile media. Between 2012-2015, with financial backing from Sweden, Norway and Denmark, IMS carried out the first phase of its media development programme in the first years of the country's democratic transition period, working closely with a broad range of partners from media to government institutions, journalist associations, and civil society groups to develop a competent, professional and independent media.

Active participation by Myanmar in ASEAN, especially as chair of ASEAN in 2014, has also influenced Myanmar's treatment of its own media. Myanmar media professionals have been exposed to quite a bit of ASEAN's media agenda, including participating in training programs and seminars since Myanmar became a full member of ASEAN in 1997. ASEAN's media arrangements – many involving tight government control – would not have been intimidating for Myanmar journalists, whose circumstances were probably better than those from the Communist countries of Vietnam, Cambodia or Laos. Peer pressure, for example under the Thein Sein government (2011-16),

[9] Communication to the author from the Myanmar Times coordinator of the Sasakawa programs.

[10] Communication to the author from the coordinator of the UNESCO programs.

[11] See its website at: https://www.mediasupport.org/roadmap-free-independent-media-sector-myanma.

[12] International Media Support is a non-profit organisation working to strengthen the capacity of media to reduce conflict, strengthen democracy and facilitate dialogue. It has its headquarters in Copenhagen.

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persuaded Myanmar's leaders to seek comparable standards to its ASEAN media counterparts, even though media freedom in some ASEAN countries is not high. As a result, Myanmar's media performance during its chairing of ASEAN was creditable, if not spectacular or bold.

IV. Conclusions

Timely and relevant media reporting is playing a key role in support of reform everywhere in Myanmar: this role include sex plaining Myanmar's political developments (which many Myanmar parties are comfortable keeping in the background); disseminating the directions of economic reforms; and mobilizing support for all social initiatives. Without this energizing role of Myanmar's media, progress would falter, reforms would flounder, change would stall. Most of Myanmar's institutions (government and non-government) cope quite well with the lack of press freedom, being long accustomed to doing so on the basis of what seem to be unwritten rules. However, controls on new media (social media and the Internet) are not as liberal, and problems sometimes occur. It remains to be seen how the new NLD Government will approach restrictions on the media, which it may be reluctant to amend when faced by communal tensions between Buddhist and others.

Myanmar's media should have a critical role to play in helping consolidate democracy, as democracy cannot be achieved by political practitioners alone, and cannot fulfil its goals in practice without full and explicit public endorsement. The enthusiasm with which Myanmar journalists have since 2012 consistently exposed sensitive issues and explained ongoing protests and problems is undoubtedly praiseworthy. In many cases, media reporting has ensured government policy has been held to account and the interests of ordinary people (such as workers, land holders and victims of discrimination) have been better protected. In many cases, of course, such media coverage has meant criticism of government policies or practices that may have caused discomfort and perhaps even anger on the part of the authorities. Much of the government sensitivity has been exaggerated, and may have been unnecessary or avoidable, but in the areas of national security (carefully defined) some tensions may be understandable.

Myanmar's media still faces some serous institutional weaknesses, but these weaknesses might be eased over time. One cause of continuing real problems for Myanmar's media seems to be the absence of adequate laws in Myanmar to protect journalists. Journalists anywhere can publish information which is embarrassing for governments, even though the journalists might be seeking to improve the scope for the people to obtain proper redress through the judicial system, and seeking to hold accountable those in the government who have violated the law, but who informally (or formally!) enjoy a measure of impunity. One thing to look forward to is other participants in Myanmar's political processes acquiring much better media skills themselves. This is already happening in many ways: a noticeable increase in use of social media by Myanmar's political decision-makers is already occurring; and a strong sense among Myanmar elites of how to maximise media impact is probably now irreversible.

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Statistical Modeling on Determinants of Traffic Fatalities and Injuries in Wolaita Zone, Ethiopia

By Bereket Tessema Zewude & Kidus Meskele Ashine
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Abstract- Road traffic accidents are a major public health concern. In developing countries road traffic accidents are among the leading cause of death and injury. Ethiopia experiences the highest rate of such accidents in Sub-Saharan Africa. Out of all the accidents registered in Ethiopia, Addis Ababa accounts for 60% on average especially in Wolaita zone more 25% on average. The objective of this study is to identify factors that contribute to the occurrence of road traffic accidents leading to human injuries and death. For study purpose we employed ordinal logistic regression models to identify factors influencing traffic fatalities and injuries. Stratified sampling with proportional allocation and simple random sampling technique are used to select samples from recorded frame. The result of ordinal logistic regression analyses shows that drivers aged 18-30 years caused the largest number of accidents.

Keywords: *fatalities, injuries, odds ratio, ordinal logistic regression, traffic accident. wolaita zone, Ethiopia.*

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Statistical Modeling on Determinants of Traffic Fatalities and Injuries in Wolaita Zone, Ethiopia

Bereket Tessema Zewude [α] & Kidus Meskele Ashine [σ]

Abstract- Road traffic accidents are a major public health concern. In developing countries road traffic accidents are among the leading cause of death and injury. Ethiopia experiences the highest rate of such accidents in Sub-Saharan Africa. Out of all the accidents registered in Ethiopia, Addis Ababa accounts for 60% on average especially in Wolaita zone more 25% on average. The objective of this study is to identify factors that contribute to the occurrence of road traffic accidents leading to human injuries and death. For study purpose we employed ordinal logistic regression models to identify factors influencing traffic fatalities and injuries. Stratified sampling with proportional allocation and simple random sampling technique are used to select samples from recorded frame. The result of ordinal logistic regression analyses shows that drivers aged 18-30 years caused the largest number of accidents. Low educational background of drivers, absence and poor lighting along roads, wet surface and asphalt surface, morning and evening hours, places like offices, residential and commercial neighborhoods, automobiles and small taxis/Bajaj's were found to be associated with fatalities and serious injuries. We conclude that for effective and safe traffic management, the concerned transportation authorities can consider the above mentioned predictors as potential causes of accidents in their order of importance in order to take preventive measures.

Keywords: fatalities, injuries, odds ratio, ordinal logistic regression, traffic accident. wolaita zone, ethiopia.

I. Introduction

Road traffic accident is defined as any vehicle accident occurring on a public highway. It includes collisions between vehicles and animals, vehicles and pedestrians, vehicles and fixed objects or vehicles and vehicles. Road traffic deaths accounted for 23% of all injury deaths worldwide in 2002. It has also been estimated that nearly 1.2 million people, male-to-female ratio being 2.34 to 1, are killed and 20-50 million people are injured or disabled each year in road traffic accidents. On average 3,300 road users are killed and about 100,000 are injured and/or disabled each day in traffic (WHO, 2004). Road traffic injures are growing as the vehicle use of developing countries rises. By 2020, road traffic injures are expected to be the third leading cause of death and disability worldwide, by some calculations matching the toll of AIDS. Residents of developing countries are at much higher risk of road traffic injures than are residents of high-income countries. They are also at greater risk of death when a crash occurs. Developing countries also have inadequate trauma systems and are often unable to care for crash victims. Unless action is taken to improve road safety systems, poor countries will continue to bear the heavy toll of road traffic injuries (Lauren and Hill, 2005). The World Health Report (WHO, 2004) shows that of the 1.2 million people killed in road crashes worldwide, 85% are in developing countries. Sub-Saharan Africa alone with only 4% of the global vehicle registered accounts for 10% of the road fatalities, and the economic, social and health consequences are grave. Conversely, the high-income nations, with 60% of the total global vehicle fleet contribute only 14% of the annual road deaths. Human error, road environment and vehicle factors are reported by the traffic police as the main causes of road crashes. Two countries, South Africa and Nigeria, account for most of the reported deaths in Sub-Saharan Africa. The South Africa figure of over 9,000 has been consistent over time, while Nigeria with 6,185 deaths has declined from a high of over 9,200 in the early 1990s. Ethiopia, Kenya, Uganda, Tanzania and Ghana are the other countries that experience high number of road deaths (WHO, 2004). Out of all the accidents registered in Ethiopia, Addis Ababa accounts for 60% on average. This is partly because the city has only five outlets that connect it all regions of the country. In addition to this about 77% of vehicles in Ethiopia are registered here. Thus Wolaita zone, having a great concentration of vehicles and traffic, takes the lion's share in car accidents. Statistical data from the Wolaita zone Traffic. According to Tewolde (2007), the highest mean number of injuries per accident took place in residential areas by drivers in the age group of 18-30 who have elementary school level of education. Therefore, in our case we tried to identify factors that contribute to the occurrence of road traffic accidents leading to human injuries and death.

II. Data and Methodology

a) Source of Data

In Wolaita zone road traffic accidents are recorded by traffic department on daily basis. The data provide information on accidents that occur within 365 consecutive days. From the collected data we will registered as slight injury, serious injury and fatal, respectively. A pilot sample was used in order to

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determine and estimate the required sample size. From the total record pilot samples were taken as slight injury, serious injury and fatal. This means the data have three strata: slight injury, serious injury and fatal. Stratified sampling with proportional allocation and simple random sampling technique was used to select samples from recorded frame for each stratum.

b) Data Collection

According to the definition of the Traffic Police, a road traffic accident is considered to be any event of human injury and/or death as a consequence of a physical collision between a responsible party (motor vehicle including motorcycle, car, van or truck, and bicycle) and an injured/damaged party (motor vehicle, bicycle/ bike, pedestrian, or any physical object, e.g., building or tree). In cases when the crash involves a motor vehicle and/or bicycle with pedestrians, the information about the driver/rider of the motor vehicle/bicycle (age, sex, alcohol consumption, speed, type of motor vehicle) is recorded at Wolaita zone traffic department regardless of the responsible party. When the accident involves two motor vehicles the record is made only for the responsible party.

c) Variables included in the study

The response variable is "level of injury severity of road traffic accident involving humans". In this study the response is an ordered variable categorized into three: slight injury, serious injury and death. Slight injury assumes the lowest order one while serious injury and death have orders two and three, respectively.

Predictor factors considered as determinants of traffic accidents involving human injuries are grouped into human, vehicle, road, environmental, and other factors.

Human factors are sex of driver, age of driver, driving experience, vehicle ownership status and driver educational background.

Vehicle factors are driving direction at the time of accident, vehicle type, and vehicle age.

Environmental factors are atmospheric condition, light condition, day of accident, time of accident, and road condition.

Road factors are place of accident, road situation, road junction, road class, and surface/ pavement roughness.

Other factors include reason for accident and accident type.

III. Methodology

Both ordinal logistic regression as well as cumulative logit model were used. For ordinal logistic regression response variable can take the three levels of injury as indicated above, and these are ordered depending on the level of severity as slight injury, serious injury and death – the lowest, middle and highest orders being slight injury, serious injury and death, respectively. When the response variable denoted Y, is ordinal, the categories can be ordered in a natural way. One way to take account of ordering is the use of cumulative probabilities and cumulative odds. In general considering k ordered categories, these quantities defined are defined by:

$$P(Y \leq i) = p_1 + p_2 + \cdots + p_i$$

$$odds(Y \leq i) = \left(\frac{P(Y \leq i)}{1 - P(Y \leq i)}\right) = \frac{p_1 + p_2 + \cdots + p_i}{p_{i+1} + \cdots + p_k} \quad i = 1,2, \ldots, k-1$$

Currently, the most popular model for ordinal response uses logits of cumulative probabilities, often called cumulative logits.

$$logit(Y \leq i) = \ln\left(\frac{P(Y \leq i)}{1 - P(Y \leq i)}\right) \quad i = 1,2, \ldots, k$$

The cumulative logistic model for ordinal data is described below.

a) Cumulative Logit Models

A cumulative logit model is one of the most commonly used models for the analysis of ordinal categorical data and belongs to the class of generalized linear models. It is generalization of a binary logistic regression model when the response variable has more than two ordinal categories. It is also the cumulative logit model is used when the response of an individual unit is restricted to one of afinite number of ordinal values. In cumulative logit model, the effect of β is the same for all i, often referred to as a proportional odds model (McCullagh and Nelder, 1989). In other words, the model assumes that the effect of each independent variable is the same for each cumulative probability. This model provides a single odds ratio (OR) estimate for all response categories, which can be obtained by exponentiation of the β coefficient. The estimate is quite convenient in terms of the model's ease of interpretation and parsimony. The proportional odds model is used to estimate the odds of being at or below a particular level of the response variable. If there are i levels of ordinal outcomes, the model makes k-1 predictions, each estimating the cumulative probabilities at or below the i^{th} level of outcome variable. This model can estimate the odds of being at or beyond a particular level of the response variable as well, because below and beyond a particular category are just two complementary directions. The model's threshold varies for each of the equations and satisfies the conditions $\beta_{o1} \leq \beta_{o2} \leq \cdots \leq \beta_{ok-1}$, where $\beta_o's$ are cut points, usually nuisance parameters of little interest. A model can simultaneously describe the effect of an explanatory variable on all cumulative probabilities for y. the model is defined by:

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$$logit\left[P(Y \leq i|x_1, x_2, \ldots, x_p)\right] = ln\left[\frac{P(Y \leq i|x_1, x_2, \ldots, x_p)}{P(Y > i|x_1, x_2, \ldots, x_p)}\right] = \beta_{io} + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p ,$$

$i = 1,2, \ldots, k-1$. When $\beta > 0$, this means that the corresponding independent variable is more likely to have higher values of y. Also the parameterization of this model is in accord with the usual formulation, in sense that a positive β corresponds to a positive association (a higher x tending to occur with higher y) in other words If $\beta > 0$ (odds greater than one) in this study this means increased likelihood of accident can be fatal/serious injury.

Table 2: Parameter estimates of the ordinal logistic model

Variables	Estimates	S.E	Wald	Df	Sig	Odds-ratio
Threshold [severity level=1]	3.5	1.3	2.7	1	.000	
[severity level=2]	6.3	1.5	4.2	1	.000	
Age of driver	**-.51**	**.11**	**21.5**	1	.000 *	
18-30	1.21	.51	5.63	1	.000*	3.4
31-50	1.11	.78	2.62	1	.000 *	3.0
≥51(ref.)						
Driving experience	**.55**	**.11**		1	.000*	
≤1 year	-1.53	.15	104.0	1	.000*	.22
1-2 years	-1.25	.22	32.3	1	.000*	.29
2-5 years	-.58	.14	17.1	1	.000*	.56
>5years (ref.)						
Educational background	**-.65**	**.12**			.001*	
Elementary school	1.75	.32	29.9	1	.000*	5.79
Junior school	1.43	.15	90.8	1	.000*	4.18
Secondary school	.75	.12	39.2	1	.000*	2.11
Above secondary school(ref.)						
Vehicle type	**-.23**	**.11**	**44.0**	1	.000*	
Automobile	1.45	.14	107.3	1	.000*	4.26
Bajaj	1.50	.20	56.5	1	.002*	4.48
Minibuses	.95	.42	14.1	1	.000*	2.58
Cargo	1.32	.45	2.26			
Buses	1.21	.55	8.6	1	.000*	3.35
Other vehicles(ref.)						
Atmospheric condition	**- 1.42**	**.38**	**13.96**	1	.000*	
Good condition	1.78	.41	18.84	1	.000*	5.93
Rainy(ref.)						
Light condition	**1.41**	**.15**	**88.4**	**1**	**.000***	
Day light	-2.75	51	29.0	1	.000*	.06
Dark but lighted	-2.68	.55	23.74	1	.000*	.07
Dark(ref.)						
Time of accident	**- .57 .10**	**32.5**		1	.000*	
Morning	1.40	.35	16.0	1	.000*	4.05
Day	1.35	.40	11.4	1	.000 *	3.85
Evening	1.79	.30	35.6	1	.000*	5.99
Night(ref.)						
Road condition	**1.65**	**.35**	**22.2**	1	.000*	
Dry	- 1.88	.31	13.6	1	.000*	.153

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Wet(ref.)	**1.65**	**.35**	**22.2**			
Road surface roughness	**-1.98**	**.55**	**12.96**	1	.000*	
Asphalt	1.78	.51	49.00	1	.000*	5.75
Not asphalted(ref.)						
Road junction	**-.46 .23**	**4.0**		1	.000*	
No junction	.66	.12	30.5	1	.000*	1.93
Junction(ref.)						
Place of accident	**-1.65**	**.63**	**6.85**	**1**	**.000***	
Office	1.55	.45	11.9	1	.000*	4.71
Residential	2.50	.54	21.4	1	.000*	12.18
Commercial	1.75	.35	25.0	1	.000*	5.75
Religion centers	1.18	.75	2.5	1	.000*	3.25
Recreation	1.00	.33	9.2	1	.002*	2.78
School(ref.)						
Accident type	**-.78**	**.11**	**50.3**	1	.000*	
Crashing with pedestrian	1.50	.40	14.1	1	.000*	4.48
Crashing with another vehicles	1.60	.44	13.1	1	.000*	4.95
Others	1.75	54	10.5	1	.000*	5.75
Cashing with objects(ref.)						

**Significant at 5% level of significance*

IV. Results and Discussion

The results of the ordinal logistic regression analysis in Table 2, shows that age of drivers is a significant indicator of fatal and serious injuries. The odds-ratio of accidents causing fatal/serious injury is higher in the case of young drivers (18-30 years and 31-50 years) compared with the elderly drivers (aged above 51 years). As compared to those with driving experience of more than 5 years, the odds-ratio of causing fatal/serious injury for drivers with driving experience of utmost one year, 1-2 years and 2-5 years were lower by a factor of 0.22, 0.29, and 0.56 times, respectively. Drivers with elementary, junior secondary and secondary level of education are about 5.75, 4.18, and 2.11 times more likely to get involved in fatal/serious injuries as compared to those with above secondary school level of education, respectively. The odds-ratio of traffic accidents causing fatal/serious injury is higher for drivers with automobile (4.26 times), buses(3.35 times), Bajaj (4.48 times), and taxis or minibuses(2.58 times) as compared to the reference category "other vehicles". The odds-ratio of accidents causing fatal/serious injury is higher during a clear condition as compared with a rainy condition. There is a significant relationship between light condition and severity level of accidents. The odds-ratio of traffic accidents causing fatal/serious injury is higher in a dark condition as compared to daylight and dark-lighted conditions. The odds of traffic accidents causing fatal /serious injury are higher in the morning, day and evening as compared to accidents at night. Regarding road condition, the likelihood of fatal/serious injury is higher on wet roads as compared to dry condition. Fatal and serious injury is about 5.75 times more likely to take place on asphalt roads compared to those driving on not asphalted roads. Accidents causing fatal/serious injuries at roads without junction are 1.93 times higher as compared to accidents at junction roads.

Human Factors: While the actions of people might be influenced by subconscious motives and subliminal cues, they are also the most adaptive elements in the traffic system. They can create risk situations as well as respond to ever changing new demands of the traffic environment. The findings of the study show that accident rates of young drivers are more than the rest of the examinees. This may be related to reckless driving, psycho-biological immaturity, an excessive belief in one's own abilities, lack of experience, driving culture,

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and lifestyle induced risky type of exposure such as night driving. Drivers who have more than 5 years of experience cause fatal/serious injury than those who have less driving experience. This could be due to overconfidence and carelessness. The highest risk group for accident is drivers with primary school educational level. The risk of accident decreases a bit among junior high school graduates. Drivers with above secondary school level of education have the least involvement in accidents. This indicates that education is a considerable factor to prevent road traffic accidents. Thus, it can be said that understanding, interpreting and obeying the regulations are parallel to education and behaving more logical.

Vehicle Factors: Vehicle type was found to be an important factor which affects human injury/fatality caused by traffic accidents. Even if buses and taxies/ minibuses play an essential role in public transportation, our results showed that these vehicles (in addition to automobiles, cargo vehicles and buses) pose a significantly greater fatal/serious injury risk to pedestrians. Note that cargo vehicles have larger mass, greater momentum and longer stopping distance. For any given speed, the greater the mass of the vehicle, the greater would be its force of impact at collision with the pedestrians leading to higher injury severities. Furthermore, it is possible that drivers of small vehicles but high speedy are more likely to weave around in traffic, change lanes, dart ahead of others or even take corners and curves faster. This finding seemed to be in accordance with other studies (Tewolde, 2007).

Environmental Factors: Most of the accidents occurred in good conditions. Poor light conditions contributed to causing fatal/serious injuries, which indicates that poor light conditions could increase the probability of causing fatalities when a crash occurs. This is possibly due to poor visibility at night in the absence of street light is limited by the range of headlights and glare from oncoming vehicles headlights. In addition, drivers are also unable to distinguish pedestrians from the shaded surroundings due to their darker outfits. All these can lead to drivers braking later or taking less effective avoidance maneuvers leading to increased risk of crash and serious injury. This finding is consistent with other studies (Luma and Sivak, 1992). Traffic accidents causing fatal/serious injury are higher in the morning, during the day, and in the evening as compared to accidents during the night. This indicates that in the morning (the beginning of the working day) and evening (the end of the working day) the roads are typically busy with traffic volume, and during daytime, there are increased activities such as commercial activities and work related (office) activities, etc. So this situation gives rise to increase in the number of accidents. In terms of road surface condition, this study found out that wet surface condition resulted in a higher likelihood of fatal/ serious injury than dry surface. This could be because on wet road surfaces it is difficult to stop vehicles easily. This implies that the possibility of death/serious injury will be high.

Road factors: The environment with its road network creates the framework for the behavior of traffic and exposes those who are on the network to various accident risks. Traffic environment can support and promote safe behavior, but it can also encourage or lead to risky behavior. The findings of the study show that the majority of the fatal/serious injuries have occurred on asphalt roads. This finding is consistent with previous studies (Yayeh, 2003). This is due to the fact that asphalt roads increase vehicular speed. Therefore, if a crash happens, a pedestrian is more likely to suffer from more severe injury due to the higher impact speed. The findings of this study show that traffic accidents causing fatal/serious injuries at no-junction roads are higher as compared to accidents at junction roads. This finding is consistent with the study by Singh *et al*. (1998). This could be due to the reason that at junction not only drivers but also pedestrians are more careful and also there may be traffic lights at junctions. Most accidents took place around offices, residential and commercial neighborhoods. It should be noted that these places are typically busy with traffic volume giving rise to increase in the number of accidents. A study by Tewolde (2007) also reported the same result. The findings of this study also show that the odds of accident being fatal/serious injury due to crashing with pedestrians, and crashing with another vehicle were higher as compared to crashing with objects. As expected, the serious injury risk significantly increased for pedestrians who tended to cross a road without proper right of way. Since drivers do not expect pedestrians at locations not designated for pedestrians, they might fail to detect the pedestrian in time and take evasive actions accordingly. This might result in higher impact speed during collision leading to greater injury risk. Negligent crossing behavior has been reported to be a major cause of pedestrian collision and injury by Yayeh (2003).

V. Conclusion

Drivers with driving experience of more than 5 years are significantly exposed to traffic accidents causing fatal/serious injury. Drivers aged 18-30 years and aged 31-50 year, drivers with lower educational background, no-junction roads, absence of lighting, wet surface and asphalt surface are highly associated with fatal/serious injuries. Accidents occurring in the morning and evening and accidents that occur in office areas, residential and commercial neighborhoods are more likely to result in fatal/serious injuries. Automobiles and taxis/Bajaj create fatal or serious injury.

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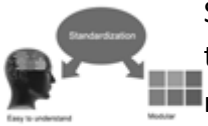


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3. Submission of Manuscripts,

4. Manuscript's Category,

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3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

4. 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.

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

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

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

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

12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. 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 to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.



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27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After 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 to 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 in your research.

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 criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of 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 the 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

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

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



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Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing 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 approach 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. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than 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 maintain the initial two items to no more than one ruling each.

- Reason of the study - 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 quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness 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 to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled 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 with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
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- 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 sound written Procedures segment allows a capable scientist to replacement 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 for the least amount of information that would permit another capable scientist to spare 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 object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text 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:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not 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 - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in 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.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a 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. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise 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 in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to 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 part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a 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 implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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