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Friction Stir Welding of Austenitic NiTi Shape Memory Alloys

Lima, J. S., Neto, A. C. W. & Melo, R. H. F

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Abstract- This prospective work aims to evaluate the weldability of thin sheets of NiTi shape memory alloy by friction stir welding process. The phase transformation temperature was determined by ERT, the mechanical properties were evaluated by Vickers microhardness and tensile test. The fracture surface was investigated by SEM. The welded joints remained in the austenitic state after welding, achieved ultimate tensile strength of 700 MPa and 13% strain the main fracture mode was ductile.

Keywords: NITI shape memory alloy, friction stir welding process, mechanical properties.

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Friction Stir Welding of Austenitic NiTi Shape Memory Alloys

Lima, J. S. ^α, Neto, A. C. W. ^σ & Melo, R. H. F. ^ρ

Abstract- This prospective work aims to evaluate the weldability of thin sheets of NiTi shape memory alloy by friction stir welding process. The phase transformation temperature was determined by ERT, the mechanical properties were evaluated by Vickers microhardness and tensile test. The fracture surface was investigated by SEM. The welded joints remained in the austenitic state after welding, achieved ultimate tensile strength of 700 MPa and 13% strain the main fracture mode was ductile.

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I. INTRODUCTION

NiTi shape memory alloys (SMA) are a unique class of metals that show non-diffusional phase transformation in the solid state induced by temperature changes and/or mechanical loads [1-3], differently of conventional engineering metals. The shape memory properties combined with the good corrosion resistance and biocompatibility of the NiTi shape memory alloys make them high attractive to smart engineering applications, such as Micro-Electro-Mechanical-Systems (MEMS). On the other hand, these alloys present great problems of machining and conformability that limit their applications. Thus welding techniques appears as a viable technological alternative to obtain complex geometry components made of shape memory alloys [4, 5].

Joining NiTi SMA by fusion welding processes is a technological challenge due to the formation of fragile intermetallic compounds, which leads to a intense loss of tenacity in the welded joints, due to solidification cracks associated with the dendritic microstructure of the weld metal. In addition, precipitation of deleterious phases in the thermally affected zone and in the weld metal can result in severe reduction of mechanical resistance [6-10]. Solid state welding processes, like friction stir welding (FSW), are a technical alternative to join these alloys because no precipitation of brittle intermetallic compounds occurs [11].

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II. MATERIALS AND METHODS

In this paper an austenitic NiTi shape memory thin sheet was used. Table 1 shows the chemical composition of the sheet, according to Sunrise Titanium Technology Co. Ltd.

Tab.1: Chemical composition of thin sheets (wy.%)

Ti (%)	Ni (%)
44,09	55,91

After previous studies, the FSW process parameters used was 180 mm/min welding travel speed and rotation of tool tip of 1500 rpm. A 4-axis HOMI machining center was used to fabricate the welded joints. The tool shoulder diameter is 17 mm and the tip diameter is 2mm.

The phase transformation temperature was determined by variation of the electrical resistance as a function of the temperature (ERT) [2] with an average heating or cooling rate of 4°C/min cooling from 100°C to -60°C and then heating to 100°C. The microhardness measurements were performed using a microindenter model FM-700 from Future Tech, applying a load of 50 gf for 15 seconds with a distance between the indentations approximately of 200 μm. Tensile tests were performed on an MTS 810 testing machine with a displacement rate of 0.05mm/min at room temperature. The fracture surfaces were observed by scanning electron microscopy (SEM) using a TESCAN microscope, VEGA 3 SBH model.

III. RESULTS AND DISCUSSION

Fig.1 shows the percentage variation curves of the electrical resistance as a function of temperature (ERT), using the temperature of 100°C as the austenitic reference state. The profile of the curve in the friction stir welded condition indicates, qualitatively, that the material will be in the austenitic state at room temperature (about 25°C). It is only possible to identify a slight inflection of the ERT curve, indicating possible temperature of beginning of the R phase transformation (Rs) from austenite phase. This behavior is similar to that of NiTi SMA alloys that have been subjected to cold or hot rolling, which phase transformation are blocked due to the characteristic hardening of this manufacturing process [2, 11]. The R phase is a transition state

between the austenitic and martensitic phases of NiTi SMA characterized by a trigonal crystalline structure with rhombohedral distortion [12].

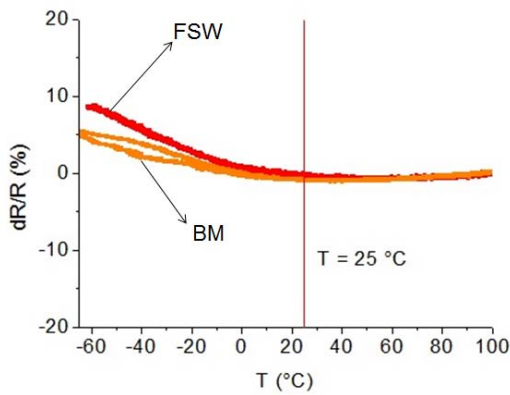


Fig.1: Variation of electrical resistance as a function of temperature (ERT) in NiTi FSW condition and the base metal (BM)

Fig.2 shows the Vickers microhardness profile of the welded joint. It is possible to verify that the hardness in the stir zone is higher than the base metal, due to the mechanical work of the FSW process, which promotes grain refining and consequent increase of resistance [11].

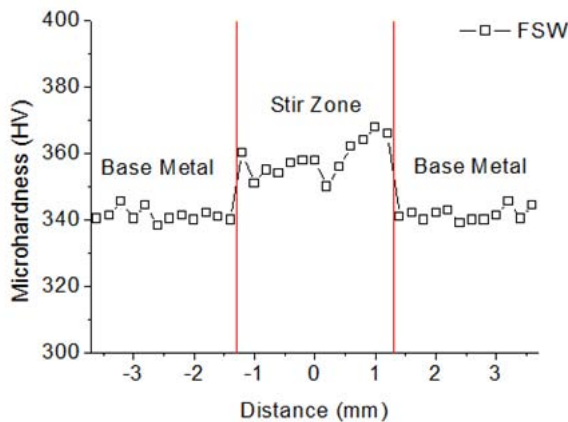


Fig.2: Vickers microhardness profile of the welded joint

In Fig. 3 it is possible to observe the stress-strain behavior of NiTi SMA welded joint. The welded joint showed satisfactory mechanical resistance [13, 14, 15], reaching a ultimate tensile strength of 700 MPa and 13% strain, higher than those observed by other authors that utilized fusion welding processes [5, 7, 16, 18, 19, 20, 21, 22-26] and equal to those who used solid state welding processes [11, 27] except Shinoda et al [28].

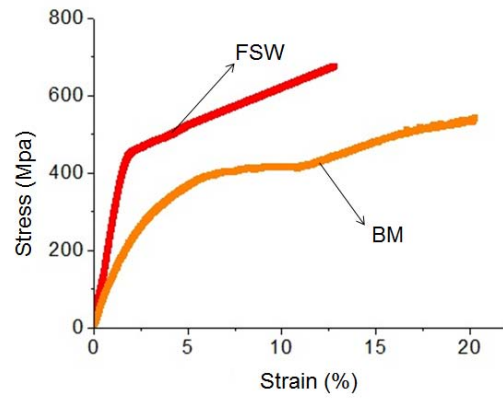


Fig.3: Stress-strain behavior for NiTi SMA friction stir welded joint

Fig.4 shows the aspect of the fracture surface of the welded joint. The fracture occurred near the center of the stir zone presenting ductile characteristics, such as dimples due to large deformations achieved.

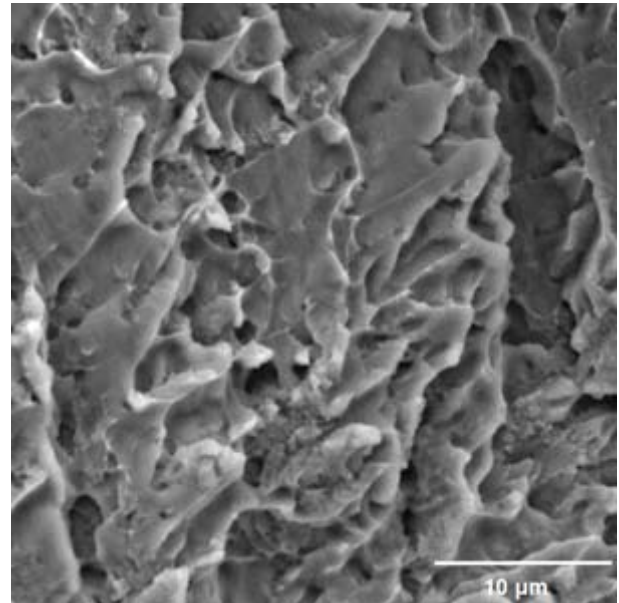


Fig.4: Fracture surface of the friction stir welded joint

IV. CONCLUSION

In this paper thin sheets of NiTi SMA were welded by FSW process. The welded joint obtained by this process presented good mechanical properties and it was capable of achieve 700 MPa ultimate tensile strength and 13% strain. The welded joint remained in the austenitic phase state after welding, differently of fusion welding process. The stress induced martensite occurs at 450 MPa in the welded condition, 50 MPa above the base metal. The increase in mechanical resistance in detriment of ductility observed indicates that hardening occurs in function of the mechanical work of the friction stir welding process.

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Annotated Bangla News Corpus and Lexicon Development with POS Tagging and Stemming

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Abstract- In this paper, we have developed a mono-linguistic Bengali news corpus using knowledge based AI (Artificial Intelligence) technique from some widely read Bengali newspapers which will be used as a reference corpus and will be very useful for lexicon development, morphological analysis, and automatic parts of speech detection. The corpus contains 74,698 word forms. The words in the lexicon are annotated with a combination of manual tags addressing Parts-of-Speech, Stemming, Morphemes, and other grammatical features are very important for almost all Natural Language Processing (NLP) applications. The lexicon contains around 14 thousand entries.

Keywords: corpus, POS, tagging, stemming, lexicon.

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Annotated Bangla News Corpus and Lexicon Development with POS Tagging and Stemming

Tasnim Haider Chaudhury ^α, Abdul Matin ^σ, M.S. Hossain ^ρ, Asie Uzzaman ^ω & Md. Masum ^ξ

Abstract- In this paper, we have developed a mono-linguistic Bengali news corpus using knowledge based AI (Artificial Intelligence) technique from some widely read Bengali newspapers which will be used as a reference corpus and will be very useful for lexicon development, morphological analysis, and automatic parts of speech detection. The corpus contains 74,698 word forms. The words in the lexicon are annotated with a combination of manual tags addressing Parts-of-Speech, Stemming, Morphemes, and other grammatical features are very important for almost all Natural Language Processing (NLP) applications. The lexicon contains around 14 thousand entries. In this paper we present some statistical analysis on some Bengali newspapers Prothom-Alo, Daily Janakantha, Daily Kalerkantho and Amardesh online from 1st January, 2012 to 31st January, 2012 those are the most popular Bengali newspapers in Bangladesh. We proposed a user friendly software interface to the user to annotate a large existing Bengali word set for the lexicon build up process.

Keywords: corpus, POS, tagging, stemming, lexicon.

I. INTRODUCTION

The significance of large annotated corpus is a widely known fact. It is an important tool for researchers in Machine Translation (MT), Information Retrieval (IR), Speech Processing, Knowledge Based Computer System and Natural Language Processing (NLP). But in Bengali language we do not have large annotated corpus. The development of corpus creation and distribution of language resources and its availability is must for enhancing Language processing capabilities and research in this field [1]. A corpus is also an essential language resource for creating automatic dictionary from a huge collection of language text [2]. It is the central repository of data for all language processing applications. Researchers are taking this field as a huge sector of researching. In [3, 4, and 5] they focus on automatic Bangla corpus creation by combination of Bangla font. It contains information for human consumption as well as computer programs. The book of "Corpus linguistics and Language Technology" [6] is

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a warehouse for corpus related studies with special attention to Bangla, where discussed almost every linguistic features of this language. In this paper, we are trying to present a reference corpus and a new approach into language investigation to understand how a text corpus database is utilized to obtain new result on a language or its properties. Bangla Corpus can be used for several purposes including spell checkers and morphological analysis for Bangla language.

A Bangla corpus can be extracted systematically from a Bangla corpus since it is considered a source of all words which is important for verification of Bangla sentence structure [7, 8]. This paper proposes another process to manually build up a corpus, which is essentially a list of all words in the language and tag the words sufficiently with features such as word meaning, Parts-Of-Speech (POS) and all other grammatical features. All these information need to be stored in a database and properly formatted before display to end users. The aim of the project is to formalize a procedure for a collaborative effort by different individuals or groups towards producing a tagged Bangla corpus. This requires a POS tagging interface, both web based and standalone that would provide a common platform for different contributors to enter tag information, semantic and other grammatical information that is available in a dictionary. So we used this huge and mighty source as our source of our corpus data.

II. WEB AS CORPUS SOURCE

The use of the web as a corpus for teaching and research on language has been proposed a number of times. There has been a special issue of the Computational Linguistics journal on Web as Corpus. Several studies have used different methods to mine web data. Our attempt was to create an annotated Bangla text corpus which will contain Bangla text from most popular and well read newspapers of Bangladesh based on date (1st January, 2012 to 31st January, 2012) and several categories (Sports, Crime, Editorial, International, National, State, Sports, Business), so as to make it representative of every linguistic phenomena of Bangla. This project was based on huge data or text available in electronic format. As we are lacking good Bangla OCR applications for collecting Bangla text from printed book, journal and newspaper, so we had to restrict our attempt to collect corpus text from

whatever resources we have available mainly from web. We have selected four newspapers that available in online and we used these in order to create a news corpus. These news corpuses contain 74698 word tokens and 13550 distinct words in this corpus.

III. DATA COLLECTION

a) Collection of the Raw Text

Many newspaper in our country have own online versions, but we choose four newspapers Prothom-Alo, Daily Janakantha, Daily Kalerkantho and Amaradesh online among them mainly because they are the widely read newspapers in Bangladesh and with less spelling mistakes. We consider the raw text of those newspaper available in web and download all news from web for collecting corpus The raw text for the corpus was collected from these newspapers through downloading all the news available for the year of 2012 (from 1st January to 31st January) including magazines and periodicals, which were all in html format. The process took about one month to collect all these available data manually. At this point we ended up with news of thirty days with each day having several text files that contained news of different genres. The corpus size is eighty megabytes.

b) Conversion to UTF-8 Format

Then we manually convert these entire text file to UTF-8 format to make these data available and correctly readable for our corpus creator program which only allow UTF-8 formatted text for processing.

c) Classification of Collected Data

For quick extraction of information of a UTF-8 formatted Bangla text file, we save these text files in some arranged folder format where name of these arranged folders will give information such as date of collection, source and source type, genre of data. Consider the following example like *E:\08102011\news.prothom-alocom\crime\file_001.txt* that shown in Fig. 1.

d) Database/System Design

We create a database named Corpus_db for the purpose of lexicon development with a table named Lexicon_entry having following attributes – WORD, STEM, PREFIX, SUFFIX, POS, COUNT, AMBIGUOUS, DATE, SOURCE, SOURCE_TYPE, CATEGORY, TITLE.

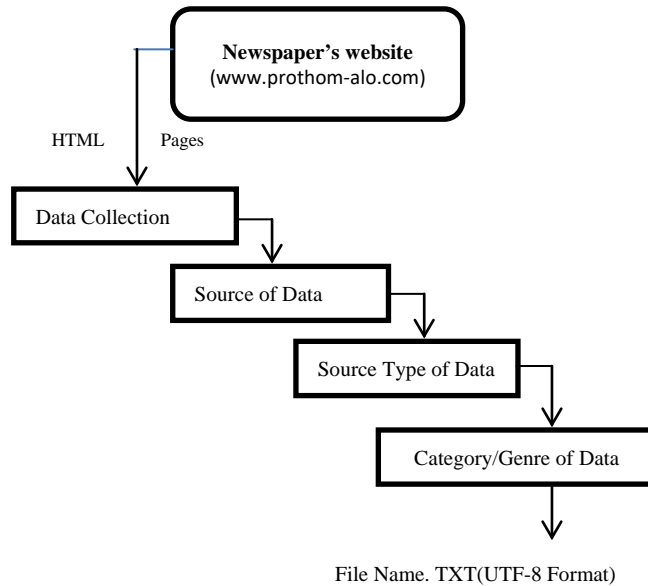


Fig. 1: Definition of data collection.

IV. TEXT PRE-PROCESSING

In this step, remove following information from the chosen data as a pre-processing –

- A. First of all, we replace English letters and numeric alphabet both in Bangla and English from the UTF text data by a single space.

```
str=str.replaceAll("[[\u0000-\u007F][\u09E6-\u09EF] II'"&&[^\?!'-.]]","");
```

- B. Then we replace all punctuation marks (except Purnacched, Colon, Question Mark, Exclamation mark, Apostrophe, Dash/Hyphen, Dot) by a single space.
str=str.replaceAll("[\p{Punct}&&[^\.!?-]]","");
- C. We also replace all Dots by a single space except those which is preceded by alphabet and followed by space.

D. We also replace all Dash/Hyphen by a single space except those which is preceded and followed by alphabet.

```
str = str.replaceAll("-| - | - ", " ");
```

অনেকহাসি-কান্না,সুখদুঃখএবংআনন্দবেদনায়মেশানো
ঘটনাবহুল২০১১সাল।

(Here Dash/Hyphen has not eliminated)

সমস্যানিরসনেরপথরাজনৈতিকদলগুলোএগিয়েযাবেকিনান
তুনবছরেতাৎখারজন্যইদেশবাসীরএখনঅধীরঅপেবা।

(Here Dash/Hyphen has eliminated)

E. We also replace all Apostrophe/Inverse Comma/Quotation Mark by a single space except those which is preceded and followed by alphabet.

```
str = str.replaceAll("'| ' | ','", " ");
```

'আজিএউষারপুণ্যলগনে,উদিছেনবীনসূর্যগগনে।'(Here quotation mark has eliminated)

আগেরদুবছরঅস্বাভাবিকউর্ধগতিরপরবড়ধরনেরপতনেরম
ধ্যদিয়েইশেয়ারবাজারে২০১১সালশুরু।

(Here Apostrophe has eliminated)

F. We replace all sequences of single or more spaces by a single space.

```
str = str.replaceAll("( )+", " ");
```

G. Then output file will save as "D:\PreProcessed_File.txt" and this pre-processed text will be used for POS tagging, Stemming and Morphological Analysis.

H. This pre-processed text file will be referred to as our Raw Corpus. This corpus will be useful to evaluate the performance of annotated text corpus and also

will be used for input text of machine translation system.

V. DEVELOP USER INTERFACE

We proposed a user-friendly software interface to the user to annotate a large existing Bangla word set for the lexicon build up process. The effort will be a significant progress towards development of a properly annotated lexicon. This user interface has two distinct parts – one for building corpus and show text information such as source, source type, category, date, title and news content. Another parts for issuing manual addressing Parts-of-Speech, Stemming, Morphemes, issue clitic, ambiguous condition and other grammatical features.

VI. LEXICON DEVELOPMENT

A supervised machine learning method has been used for lexicon development from the Bengali news corpus. No extensive knowledge about the language is required except the knowledge of the different inflections that can appear with the different words in Bengali. To make proper annotation of word form, we accomplished each word form with POS tag, stem form, suffix, prefix, ambiguous condition (if exists), statistical counting. Initially, all the words (inflected and uninflected) are extracted from the pre-processed text and added to a database with proper POS, stem, prefix, and suffix. The system retrieves the words from the pre-processed text and creates a database of distinct word forms with fully annotation. Here is given the structure of lexicon development process and some sample word forms shown in Fig. 2.

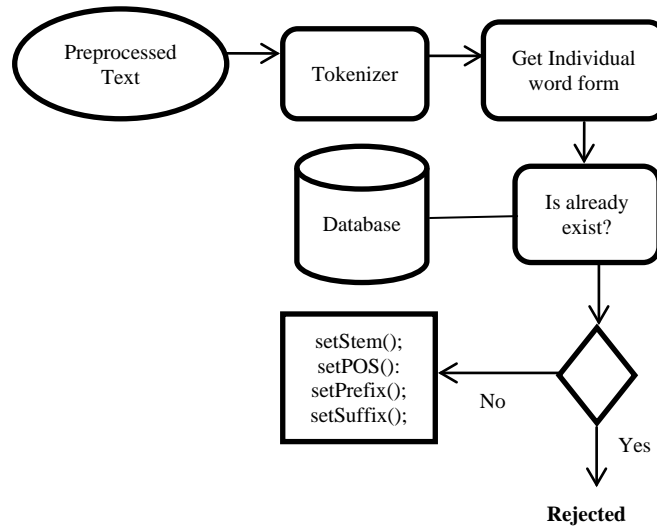


Fig.2: Structure of Lexicon development

A. POS tagging for Lexicon Development

The Part-of-Speech (POS) tagging is the process of assigning each word of a text with an appropriate parts of speech tag. POS tags often signify

the morphological [9], phonological and contextual properties of a word, and also provide information about neighboring words.

In Bengali, there are five different POS namely, noun, pronoun, verb, adjective, and indeclinable (prepositions, con-junctions, and interjections). Noun, verb and adjective belong to the open class of POS in Bengali. In this lexicon analysis, we use seven parts-of-speech by extraction main five parts-of-speech in Bangla language. As, we know, there are a lot of word with proper noun are used in Bangla language. So we keep the proper noun distinct from other noun to get us more detail of the word form which is in the range of noun. To handle clitic which is one of the most common ambiguous situation in natural language Processing (NLP), we define a new POS form named clitic. If we add a word form in our lexicon database without setting any POS to that word form, our corpus creator software automatically set its POS as UNKNOWN. Noun and verb words are tagged by looking at their infections. Some infections may be common to some word form. In these cases, more than one POS may be generated for few words form. But here we set the mechanism for only one POS of a word form.

We only suggest a procedure to handle this ambiguity for initial level where POS ambiguity is resolved by checking the number of occurrences of these possible root words along with the POS tags as derived from same word forms. Pronoun and indeclinable are basically closed class of POS [10] in Bengali and these are added to the lexicon manually. It has been observed that adjectives in Bengali generally occur in four different forms based on the suffixes attached. For simplicity of counting or detecting sentence, we propose a user define POS named EOL (end of line). Here we detect POS for *Purnacched*, *Question Mark*, and *Exclamation mark* as EOL. The short description of POS categories is given in Table I.

B. Stemming for Lexicon Development

Stemming is an operation that splits a word into the constituent root part and affix without doing complete morphological analysis. It is used to improve the performance of spelling checkers and information retrieval applications, where morphological analysis would be too computationally expensive. Terms with common stems tend to have similar meaning. So it can drastically reduce the dictionary sized used in various NLP applications, especially for highly inflected languages. We handle this stemming process manually like previous POS tagging process. After tokenizing pre-processed text into individual word form we manually set root of that word form by removing prefix and suffix of it. Then this stem form is stored in STEM field of lexicon database.

In our process, we first stripped off the suffix part from Bengali words depending upon the type of suffixes. Then we checked for the validity of the suffix stripped word as root word, using a Bengali dictionary. If it is not sufficient we strip the affix part of the remaining

part of the word form. It can bring a set of word with same root form in a series to learn about them easily. We can get almost similar word by retrieving word which has same root/stem form.

C. Setting Morphemes for Lexicon Development

A smallest meaningful linguistic unit is consisting of a word or a word element that can't be divided into smaller meaningful parts. At the time we set stem word for a word form, we also store the stripped part of the word form as morphemes. First of all we split the suffix part of a word and store it in our lexicon database. Then we check out remaining part of our word form whether there is any prefix part of that word. If exist, we strip it from the remaining word part and store it to database by fully manually.

D. Use this Lexicon for Corpus Creation

A Corpus from linguistic point of view is defined as a collection of transcribed speech or written text compiled mainly to enhance linguistic research. The key resource to any linguistic research is a trained, annotated corpus which can elevate language processing capability such as automatic part of-speech tagging, machine translation, question-answering, stemming etc.

We design and develop a view of annotated corpus which is mainly based on knowledge based representation (Knowledge based AI technique). Here we used our Lexicon as knowledge reference for our corpus. Our lexicon is the collection of word forms with fully annotated where each word form is accomplished with parts-of-speech, stem, Morphemes (suffix, prefix) and statistical counting. When we add a word form to corpus, we bring all the morphological and grammatical information from lexicon and add this information with that word form. Corpus procedure and flow are shown in Fig. 3 that we used for creation of corpus by following steps-

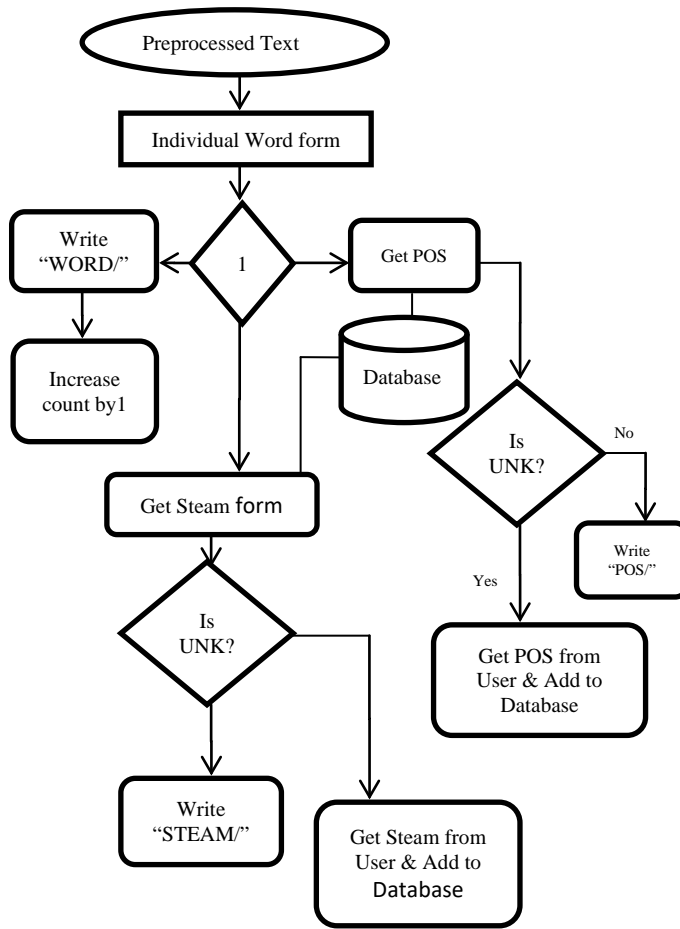


Fig.3: Process flow diagram of Corpus

Table 1: Description of POS categories

Tag Description	Tag Label	Examples
Noun(Except Proper Noun)	NN	অতীত,আন্দোলন, কমিটি, গাড়ি, তথ্য
Proper Noun	PN	মোহাম্মদ,বাংলাদেশ, টাঙ্গাইল
Adjective	ADJ	অনেক, অধিকাংশ,উচ্চ, সাধারণ, ভালো
Adverb	ADV	তাহলে,বর্তমানে,সাধারণত, অবৈধভাবে
Verb	VRB	করেছেন,যাওয়া, পারবেন, রাখা, আসা
Pronoun	PRO	আমি,আমার,নিজেদের,অনেকের
Indeclinable(Preposition, Conjunction & Interjection)	IND	এবং,যেমন,হতে,থেকে, কিন্তু, মধ্যেই

1. First of all we take pre-processed text as an input of our corpus creation.
2. Then tokenize this text into word forms. Then all these word forms is stored in an iterative list.
3. This iterative list is looped and gets each word forms as a sequence they were in pre-processed text. Then for each word, POS, Stem is brought from lexicon database and adds this information following the word form separating with for slash (/). Then we make a small change in lexicon, we increase the count value of lexicon by 1 of a word
4. For defining end of a sentence, we use EOL as word form and EOL as POS.
 - If sentence is an Assertive sentence, we use as stem.
 - If sentence is an Interrogative sentence, we use as stem.
 - If sentence is an exclamatory sentence, we use ES as stem.

Structure:

WORD/SETM/POS

Example:

আইনি/আইন/ADJ/পদক্ষেপের/পদক্ষেপ/NN/প্রসঙ্গে/প্র
সঙ্গ/NN/তিনি/তিনি/PRO/কিছু/কিছু/ADJ/বলার/বলা/RB/
আগেই/আগে/ADV/উপস্থিত/উপস্থিত/NN/বিভিন্.বিভি
ন্ন/ADJ/বাস-ট্রাক/বাস
ট্রাক/NN/সমিতির/সমিতি/NN/প্রতিনিধিদের/প্রতিনিধি/
N/সম্মিলিত/সম্মিলিত/ADJ/প্রতিবাদে/প্রতিবাদ/NN/তিনি/
তিনি/PRO/চুপ/চুপ/NN/করে/করা/VRB/যেতে/যেতে/VRB/
বাধ্য/বাধ্য/ADJ/হন/হন/VRB/EOL/AS/EOL

- If we do not get the POS and Stem information of a word form we simply assign it's POS and Stem as UNK. But we steel make change in lexicon database by increasing its counting value by 1.

Example: বিআরটিএ/UNK/UNK

- Before adding tokenized word form of pre-processed text to corpus, we add the entire information associate with this new text with some predefine TAG to raw corpus. Tag format of our news corpus has given in Table II.

VII. EXPERIMENT AND DATA ANALYSIS

a) Statistical Analysis

Regardless of the size of the corpus, it may subjected to both qualitative as well as quantitative analysis using various methods of statistics . Both

Table II: Tag Formats of News Corpus

Tag Name	Tag Description / Purpose
<ENTRY>	To define start of a new news information/data.
<SOURCE> </SOURCE>	Source of data. (www.prothom-alo.com)
<TYPE> </TYPE>	Source type of data (news, blog)
<DATE> </DATE>	Date of collection of data (11-01-12)
<CATAGORY> </CATAGORY>	Genres of that data (sports, crime)
<TITLE> </TITLE>	Title of news/data
<CONTENT> </CONTENT>	Main content of the news.
</ENTRY>	To define end of this news information/data.

- Number of fields/genres of data collection.
- Number of Raw word/Number occurrence of word stored in corpus.
- Number of Unique word in Corpus.
- Number of Unique Stem word of these raw words.
- Total Number of Sentence.
- Total Number of Assertive Sentence.
- Total Number of Interrogative Sentence.
- Total Number of Exclamatory Sentence.
- Total Number of Clitic.
- Total Number of occurrence of Clitics.

these types of corpus analysis have different perspectives. Quantitative analysis focuses classifying different linguistic properties where qualitative analysis aims to give some complete and detailed description of the observed phenomena. We wish to focus on some simple quantitative analysis using U-Gram model.

We develop our corpus development program in such efficient away where researcher can easily get a lot of common and most focused perspective statistical output without any further processing. Here also some user define output generator where user can get output with is desire requirement.

Here we divide our statistical output generator procedure in two distinct parts:

- One for automated query based information.
- Another for user defines query based information.

As result of automated query base perspective statistical output, we provide twelve statistical counting results. This type of statistical counting will be very helpful for linguistic analysis, machine translation, Morphological analysis, spelling variations, morphological structure, and word sense analysis. These statistical counting are,

- Number of source from where this corpus data collected and there list.
- Number of source type and their list of this source of data.

Statistical counting of our annotated Bangla text corpus is shown in Table III. Our Corpus program also provide some qualitative analysis aims to give some complete and detailed description of the observed phenomena which include word level frequency analysis, behavior of bangle word, use of non-Bangla word etc. These type of information can be get by using user defines query based annotated text corpus program interface.

b) Word frequency Analysis

Study of frequency calculation can provide important information about the usage of words in a

text. Using above query based information retrieval system, we can be figure out which of the words are generally most frequent given in Table IV to Table VII.

Table III: Statistical counting of annotated Bangla text corpus

Serial No	Information	Count
1	Number of source	4
2	Number of source type	1
3	Number of fields/genres	19
4	Number of Raw word/Number	74698
5	Number of Unique word	13550
6	Number of Unique Stem word	1423
7	Total Number of Sentence	5472
8	Number of Assertive Sentence	5377
9	Number of Interrogative Sentence.	72
10	Number of Exclamatory Sentence.	23
11	Number of Clitic	3
12	Number of occurrence of Clitics	136

Table IV: Most frequently used RAW words in corpus

Word	Percentage	Word	Percentage
ও	1.78	এ	0.39
না	1.34	এর	0.30
হবে	1.21	করে	0.30
হয়	1.15	তিনি	0.26
করা	0.95	আর	0.17
জন্য	0.52	তঁর	0.08
এই	0.47	মধ্যে	0.069

Table V: Most frequently used STEM words in corpus

Word	Percentage	Word	Percentage
করা	0.4	বছর	0.16
জন	0.25	সে	0.15
দিন	0.23	জন্ম	0.13
জানা	0.20	হয়	0.13
পারা	0.18	দল	0.13
থাকা	0.16	আসা	0.13
দেশ	0.16	কম	0.10
এক	0.16	কাজ	0.10

Table VI: Most frequently used POS words in corpus.

POS Name	Percentage
NN	56.43
VRB	20.53
ADJ	16.41
PN	13.71
ADV	5.94
PRO	3.39
IND	1.98
CLK	0.104
UNK	1.35

Table VII: Most frequently used PREFIX and SUFFIX words in corpus

Prefix	Percentage	Suffix	Percentage
অ	9.30	এ	15.70
নব	4.07	এর	15.43
উপ	2.23	র	8.53
প্রতি	2.23	য়	4.72
এ	1.74	ই	4.63

VIII. CONCLUSION

Lexicon development, Part of Speech (POS) tagging and stemming are very important for almost all Natural Language Processing (NLP) applications. Corpus is considered as basic resource for language analysis and research for many foreign languages. This reflects both ideological and technological change in the area of language research. The effort will be a significant progress towards development of a properly annotated lexicon. The outcome of the research will significantly be helpful for future analyzer in the processes of Morphological Analysis, Automatic grammar Extraction and Machine Translation for Bangla.

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The Impact of High Population Density on the Built Environment and the Behavior of Individuals in Amman

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Abstract- When thinking of high density, one of the most important issues is how we perceive it and how it affects us, the users of high density environments. The built environment affects directly personal relationships and neighborhood relations, while spatial configuration is an important factor in determining satisfaction of residents. Also, the experience of living in high density environments is much more complex than living in lower density environments. Thus, I believe that understanding the relationship between people and the built environment and the way in which high density affects human behavior and social relations is particularly important for designing and constructing new high-density residential environments. Amman the primate capital city of the Hashemite Kingdom of Jordan currently has a population in excess of 2 million, but in 1924 it consisted of little more than a collection of dwellings and some 2000–3000 inhabitants.

Keywords: *built environment _ environmental behavior _ high density*

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The Impact of High Population Density on the Built Environment and the Behavior of Individuals in Amman

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Abstract- When thinking of high density, one of the most important issues is how we perceive it and how it affects us, the users of high density environments. The built environment affects directly personal relationships and neighborhood relations, while spatial configuration is an important factor in determining satisfaction of residents. Also, the experience of living in high density environments is much more complex than living in lower density environments. Thus, I believe that understanding the relationship between people and the built environment and the way in which high density affects human behavior and social relations is particularly important for designing and constructing new high-density residential environments. Amman the primate capital city of the Hashemite Kingdom of Jordan currently has a population in excess of 2 million, but in 1924 it consisted of little more than a collection of dwellings and some 2000–3000 inhabitants. The present paper sets out to document and explain the phenomenal expansion of “ever-growing Amman” Through research will review the impact of population density on the built environment and the behavior of individuals through the study of two areas in the city of Amman in different population density and ask some design solutions after comparing the two areas of study global status.

Keywords: *built environment _ environmental behavior_ high density*

I. INTRODUCTION

Jordan's Population is Estimated at About 6,508,271 Countries' Population is Growing Rapidly, Over the Next Fifty Years; the Demographics Will Change Dramatically in Jordan Lack of Justice, where the Population Distribution in High-Density Concrete Spokesman Suffer While the East and South Parts of the Lack of Investment and Lack of Development of the Non-Availability of Human Potential in Them. Here we Do Not Discuss that Human Nature Feels Secure and Stability in the Booming Places Such as Cities, Villages and Various Centers, but if we Want to Continue to Develop and Thrive on Those Responsible Must Begin the Rehabilitation of Remote Areas to Accommodate the Increasing Human Energy in Jordan.

High density is a physical state involving potential inconveniences (loss of control, stimulus, lack of behavioral freedom, resources or privacy) which may or may not be prominent to a person in the situation prominence of the conditions depends on individual

differences between people ,situational conditions and social condition. Growing interest in the science of psychological self as a result of environmental degradation and urban violence and dwindling natural resources and the impact of environmental pollution on health has not theories methodology sophisticated enough available for behavioral scientists to study the psychological performance and health effects of complex environmental problems and because of this growing awareness of heart society - the environment has expanded the field of Environmental Psychology this axis Scientific study of the various relationships between human behavior and the physical environment and the effects of environmental processors on human psychology and environmental science teenager is closely related to the daily life of different sites and psychologists are studying environmental aspects of this relationship is to increase the positive and constructive findings lose demolition factors. We will search through study the impact of high population density on the built environment and the behavior of individuals in two different areas in terms of population density are the regions of Amman The importance of the study from a scientific point of being considered the first study in Jordan, which is studying the impact of population density on the behavior of individuals and the built environment. The importance of the study and practice as an important aspect for architects, designers and scientists planning to create an effective environment for future humanitarian use as a result of the continued increase in the number of residents.

– The most important reasons that led to the emergence of the problem Natural increase

One of the main reasons for the increase in population is the low mortality rate and the high birth rate due to the development of medicine and the increase in the number of hospitals

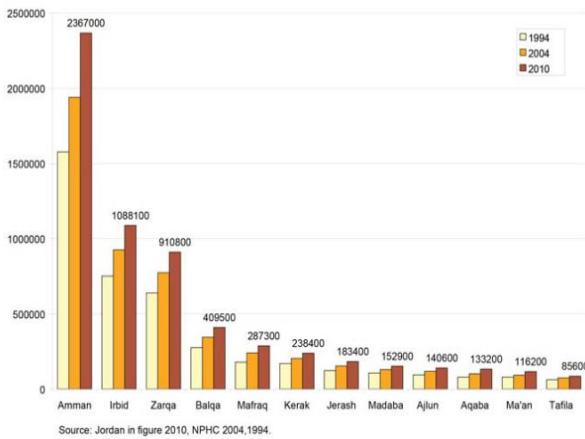
– The increase due to the inclusion of new areas for administrative boundaries of the area

– The increase due to wars

Crowding and density Jordan has a population estimated at about 6,508,271 (est. July 2011). The country's population is growing rapidly, over the next fifty years, will change the demographics in Jordan

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dramatically¹. Crowding is a subjective experience that is only mildly related to the objective index, population density (Stokols, 1972), as is obvious to anyone at a good party or anyone who has felt crowded in another contexts by one other person. It exists in three modes (Montano & Adamopoulos, 1984): situational (such as feeling constrained or having expectations dashed), emotional (usually negative, but positive emotions can occur), and behavioral (such as activity completion or assertiveness). Crowding is accentuated or ameliorated by personal factors (e.g., personality, expectations, attitudes, gender), social factors (e.g., the number, type, and actions of others, and attitude similarity), and physical factors (e.g., architectural features and spatial arrangements). Prolonged high indoor population density often impairs mental and physical health, task performance, child development, and social interaction (e.g., Evans & Saegert, 2000). Individuals in some cultures seem to cope with high density better, but sensory overload and lack of personal control lead to many negative outcomes. Short-term high density may have positive outcomes when social and physical conditions are positive. High outdoor density, as in large cities, certainly can provide an enjoyable variety of social and cultural experiences. In general, high density tends to magnify pre-existing social conditions (Freedman, 1975). To reduce the negative effects of high density through environmental design, more space is not always needed. Rather, careful environmental design (such as partitioning and behavioral Zoning) can ease crowding within a limited space²



3

How has the high density of the population effect on the built environment?

¹<https://www.google.jo/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiW6JbdzrXSAhUBuhoKHcDZCaQQFggYMAA&url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2F%25D8%25A7%25D9%2584%25D8%25A3%25D8%25B1%25D8%25AF%25D9%2586&usq=AFQjCNFcIEIGVDsCaIMyotswkSRgmucxzQ&sig2=wHfXFcTYvltYOrFcf4BF7w>

² Robert Gifford, Linda Stag, and Joseph P. Reser, Environmental Psychology, Published by Blackwell Publishing Ltd, p.444-445, 2011.

³ Department of Statistics, 1992-2014

The experience of living in high density environments is much more complex than living in lower density environments. Thus, I believe that understanding the relationship between people and the built environment and the way in which high density affects human behavior and social relations is particularly important for designing and constructing new high-density residential environments in the future. Due to the urban way of life in which a large number of residents live in artificially built areas in the city of Amman, many of their behavior is believed to be influenced by the architectural character of spaces and the characteristics of the physical environment. The built physical environment directly affects our behavior, the social systems that govern our social interactions, our individual experience and our behavior, such as infrastructure, housing and roads. The high density of the affected population in Amman is based on the multi-faceted environment⁴. High density of population affected in the city of Amman on the built environment from several aspects:

a) *Traffic jams*

Constitute a clear manifestation of the congestion caused by the growing role of the car in most big cities and seen this look like a noise of modern life and increase the problems of employment, housing and social services. The traffic jams today represent a severe problem for most cities in the area of goods and movement of people and the consequent loss of resources such as time, energy, fuel.. And reduce the economic productivity of the city and thus adversely affect the jobs and employment growth.

b) *The lack of urban services*

Usually it is difficult for local governments and departments of the cities to find or provide the services required by the population, or aspire to it as a result of the large number of these populations Lack of housing or housing crisis spread worldwide, but the people or the people of the poorest are hurting so dramatically has recorded land values in some areas, it figures high became a large section of people cannot get housing also note the low level and area of residence of the majority and basic urban services to mostly humanitarian needs are less than desired, such as educational and health facilities at all levels, as well as recreational facilities and other service

c) *The implications of the high density environments on human behavior*

With the beginnings of industrialization the scientific attention to the effects of overcrowding on people began to emerge and became organized in the 1920s, coinciding with the time when urban dwellers first

⁴ Baum A, Valins S. *Architecture and Social Behavior: Psychological studies of social density*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1977.

exceeded rural populations in many cities. Studies on the effects of high negative density on the built environment and behavior of individuals in urban life after the Second World War have increased when American and European cities recorded an unprecedented real estate boom. The first sociological studies on the influence of density are based on the premise that urban life is a continuous source of aggressive behavior, frustration and conflict that generates as a final result a number of evils and social dysfunctions.⁵

II. DENSITY AND SOCIAL PATHOLOGIES

Calhoun's laboratory study, One of the first studies on the effects of crowding is conducted on a population of rats. In laboratory conditions, populations of rats were subjected to spatial constraints and limitations, while being provided with enough water and food supplies. While the only limited resource was space, the rat population instead of growing exponentially because of food suffered a dramatic decrease, exhibiting violent and aggressive behavior, high infant mortality, a decreased quality of nests and even a lack of nest building exhibited by mothers, cannibalism, followed by asexual behavior and total withdrawal from the community's social life.

*The grouping of those manifestations was defined by Calhoun as a "behavioral sink", and the conclusions of the study and the term that describes them became very influential after they were published, migrating from the academic area into urban culture. A behavioral sink is described as being "the outcome of any behavioral process that collects animals together in unusually great numbers. The unhealthy connotations of the term are not accidental: a behavioral sink does act to aggravate all forms of pathology that can be found within a group"*⁶ From this experience, the effect of high density in the impact and change in behavior of individuals, especially in the built environment

a) Effect of density on social behavior

- High density reduces attraction (less liking for people and places) .long term density dormitory students living in triples were less satisfied with their roommates than those living in doubles⁷.
- Withdrawal may be associated with high levels of social contact; it functions as response for high density, a means of coping or an aftereffect. Withdrawal responses include: less eye contact, head movements away from others, maintenance of

greater interpersonal distance. Also the greater density leads to less helping⁸.

Higher-density development leads to Aggression and higher crime rates. People sometimes associate density with crime, even though numerous studies show that no relationship exists between the two. A study in Irving, Texas, using geographic information systems and crime statistics, found no Link between crime and density. There are many studies that have shown a high correlation between high density and crime in high density cities. The number of blocked and invisible areas increases, thus increasing the crime. The number of foreign individuals in the region increases, thus reducing the security ratio in the region⁹

b) Feeling the effects of density Physiological arousal

High social density may cause negative affective states (bad mood) and anxiety. Negative feelings caused by high density may be stronger in males than in females, males have greater personal space needs than do females. Females socializing is more affiliate (affinity for others at close range). Woman sometimes approach high density setting in more cooperative ways than do men. High density also affect in human health Higher pulse rate and blood pressure is related to high density conditions High density conditions in transportations media leads t stress. Regardless of high density, passengers boarding an empty transportation media at the first stop had lower stress (they had more control were able to chose where to sit and with whom) compared to passengers boarding halfway to the final destination¹⁰

Living under high density conditions can have negative health consequences (somewhat inconsistent) and the disease can spread more quickly in high density conditions One study has shown that the high population density led to the emergence of social stratification and the lack of per capita health care and services which led to the high rate of crime and the emergence of diseases¹¹

III. CASE STUDY IN AMMAN

a) Society and the study sample

The study represents the community Capital Governorate is the most populous province and the third largest area of the province after the governorates of Mann, Mafraq, and the most important and represent the backbone of the Jordanian state. The 2009

⁸ Robert Gifford, Linda Steg, and Joseph P. Reser, Environmental Psychology, Published by Blackwell Publishing Ltd,p.,2011.

⁹ University of Alaska Justice Center, "The Strength of Association: Housing Density and Delinquency," *Anchorage Community Indicators*, series 3A, no. 1, <http://justice.uaa.alaska.edu/indicators/series03/>

¹⁰ Robert Gifford, Linda Steg, and Joseph P. Reser, Environmental Psychology, Published by Blackwell Publishing Ltd, p., 2011.

¹¹ Hassan Jaw khaddar: 1992 Juvenile Delinquents Act, culture Library for Publishing and Distribution, Amman, Jordan,p.90

⁵ Huang,Ed Tieh-yeu,Impact of environmental design on residential crowding,1982.,Dissertations and theses paper 774

⁶ Calhoun JB. Population Density and Social Pathology. Scientific American, Vol. 206 (3), pp. 139–148, 1962.

⁷ Baum A, Valins S. *Architecture and Social Behavior: Psychological studies of social density*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1977

population estimates indicate that the number of residents of the capital province, approximately two million people, making it about one-third of Jordan's population¹². Amman is divided administratively area to 9 areas¹³

The study sample was selected by two samples of the above areas, namely Zahran area which has a population of 70,648 and the Yarmulke area, which has a population of 206,570 inhabitants. Zahran and Yarmulke were selected regions because the different population densities in the two regions to comparison between the two regions by the impact on the population density of the urban area and how it affect in the social behavior.

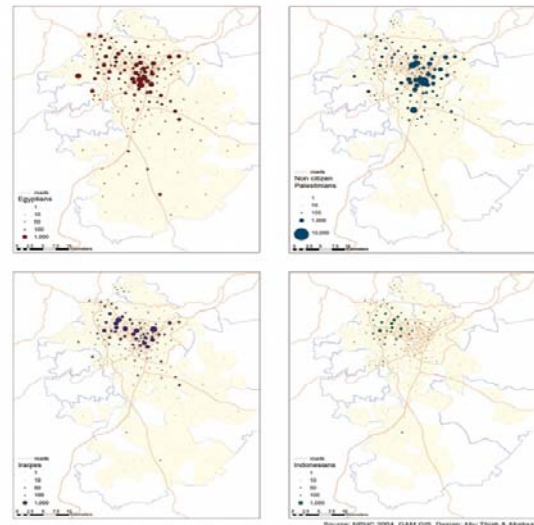
b) Study area (yarmulke and Zahran region)

Jordan is a small country, whose population is concentrated predominantly along the Mediterranean climate, in close proximity to its major cities Amman, Zarqa, Madaba, Salt and Irbid . The population of these cities and their immediate hinterland amounts to some 75% of the Jordan residents as indicated in. The study focuses on Yarmulke and Zahran region with an area of around 900 km2, which is part of greater Amman-area

c) Trends of Demographic Growth in Amman

The Urbanization in Jordan is the result of a rapid population growth caused by high natural growth and a flow of refugees. This essentially unplanned and therefore uncontrolled process results in the destruction of natural landscape and ecological footprint. Historically, urban immigration in Amman has increased at rates that have exceeded those of infrastructure development in the destination cities, resulting in concentration of population and increasing of population density. Continuous migration flows have largely contributed to an increase of the population density and built-up areas, one of the main effects of such a situation is the transformation of settlement structures and urban services.

The population growth of Amman since the second half of the 20th century has been Phenomenal, in terms of its population, density, and socio-economic characteristics. This has Transformed Amman from small town in the early 1920s of little more than 3000 people to a major city with a population of 2.4 million people¹⁴



The physical expansion of Amman 1956–1985.¹

First region _Yarmulke¹⁵ Yarmulke: one of the Greater Amman Municipality areas that make up the brigade Reed Amman, capital of the province of the Hashemite Kingdom of Jordan. Located in the central part of the Jordanian capital, Amman, and consists of three neighborhoods or residential areas. Hit area (5.502) and by (44.6) of the total area of the Greater Amman Municipality and the number of inhabitants (207.866 inhabitants).

Picture¹⁶



Second region _ Zahran¹⁷ Zahran region one of the Greater Amman Municipality areas that make up the

¹⁵[https://www.google.jo/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwig9P2au8XSAhVEOxQKHeOmB_kQFggYMAA&url=https%3A%2F%2Ffar.wikipedia.org%2Fwiki%2F%25D8%25A7%25D9%2584%25D9%258A%25D8%25B1%25D9%2585%25D9%2588%25D9%2583_\(%25D8%25B9%25D9%2585%25D8%25A7%25D9%2586\)&usq=AFQjCNEWax3t9S5N56SqOSAzSIMWWYTpDg&sig2=cOJBQu2IGyN7RCvhDnRijw&bvm=bv.148747831.d,d24](https://www.google.jo/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwig9P2au8XSAhVEOxQKHeOmB_kQFggYMAA&url=https%3A%2F%2Ffar.wikipedia.org%2Fwiki%2F%25D8%25A7%25D9%2584%25D9%258A%25D8%25B1%25D9%2585%25D9%2588%25D9%2583_(%25D8%25B9%25D9%2585%25D8%25A7%25D9%2586)&usq=AFQjCNEWax3t9S5N56SqOSAzSIMWWYTpDg&sig2=cOJBQu2IGyN7RCvhDnRijw&bvm=bv.148747831.d,d24)

¹⁶<https://www.google.jo/search?q=%D8%A7%D9%84%D8%A7%D8%B2%D9%85%D8%A9+%D8%A7%D9%84%D9%85%D8%B1%D9%88%D8%B1%D9%8A%D8%A9+%D9%81%D9%8A+%D9%85%D9%86%D8%B7%D9%82%D8%A9+%D8%A7%D9%84%D9%8A%D8%B1%D9%85%D9%88%D9%83+%D8%B9%D9%85%D8%A7%D9%86&sa=X&biw=1366&bih=613&tbm=isch&tbo=u&source=univ&ved=0ahUKEwI54Izv9s7SAhUCMB0Khc4yB50QsAQIGQ>

¹² Distribution of the population in Jordan for the year 2015 from the official website of the Department of Statistics

¹³ Ministry of Interior Administrative Devisions

¹⁴ "Ever-growing Amman", Jordan: Urban expansion, social polarisation and contemporary urban planning issues Robert B. Potter a,*, Khadija Darmame a, Nasim Barhamb, Stephen Nortcliff 2009

brigade Reed Amman, capital of the province of the Hashemite Kingdom of Jordan. Located in the central part of the Jordanian capital, Amman, and consists of five neighborhoods or residential areas. An area of (13.8) square kilometers and with a population (600,000) people.



The picture taken by researcher

Statistical methods used to analyze the questioner. To achieve the objectives of the study and verification of hypotheses has been relying on statistical methods and descriptive as follows:

1. Measures of central tendency: the arithmetic mean.
2. Measures of dispersion: standard deviation
3. Cranach's alpha reliability coefficient for the detection reliability of study tool. Testing one sample T-test to accept or reject hypotheses

IV. CONCLUSIONS

In light of the questionnaire analysis and analysis of the responses of the study sample, this aspect deals with a presentation of the overall findings of the researcher, as an answer to the questions that have been raised in the first chapter of this study, which represented her problem and hypotheses which it was built, and in the light of these results that have been reached in the current study, the researcher made a number of recommendations.

From Table (1_10) note that the arithmetic mean of all the paragraphs is greater than the arithmetic mean premise (3) this shows that all the study sample have a positive opinion towards them, demonstrating their approval of the paragraphs of the hypothesis. It also notes that the standard deviation for most paragraphs of the hypothesis is smaller than the right one, which demonstrates the heterogeneity of most of the answers to the study sample paragraphs hypothesis individuals, as well as fined that the significance (sig) for all ferries

¹⁷[https://www.google.jo/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiyvlfirusXSAhVLRQKHQWYDaMQFggYMAA&url=https%3A%2F%2Fwww.wikipedia.org%2Fwiki%2F%25D8%25B2%25D9%2587%25D8%25B1%25D8%25A7%25D9%2586_\(%25D8%25B9%25D9%2585%25D8%25A7%25D9%2586\)&usq=AFQjCNFYU1_bpKLSovUFbcfv6MxliuuxfA&sig2=OmPsThRmNsXPHiwThk4Ryw](https://www.google.jo/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiyvlfirusXSAhVLRQKHQWYDaMQFggYMAA&url=https%3A%2F%2Fwww.wikipedia.org%2Fwiki%2F%25D8%25B2%25D9%2587%25D8%25B1%25D8%25A7%25D9%2586_(%25D8%25B9%25D9%2585%25D8%25A7%25D9%2586)&usq=AFQjCNFYU1_bpKLSovUFbcfv6MxliuuxfA&sig2=OmPsThRmNsXPHiwThk4Ryw)

less than (0.05), which confirms the approval of the sample clauses hypothesis. Also note that (9) vertebrae reached the arithmetic mean in categorical term (4.21-5.0), the extent to approve strongly, while there are direct and signed in categorical term (3.41-4.2), which is the extent of approval. That reach the approval of the study sample of all first hypothesis phrases in the regions of Zahran and Yarmulke this confirms the validity of the hypothesis (*no effect of the high population density on the built environment*)

From Table (1_12) note that the arithmetic mean of all the paragraphs is greater than the arithmetic mean premise (3) This shows that all the study sample have a positive opinion towards them, demonstrating their approval of the paragraphs of the hypothesis. It also notes that the standard deviation for most paragraphs of the hypothesis is smaller than the right one, which demonstrates the heterogeneity of most of the answers to the study sample paragraphs hypothesis individuals, as well as fined that the significance (sig) for all ferries less than (0.05), which confirms the approval of the sample clauses hypothesis. Also note that (6) vertebrae reached the arithmetic mean in categorical term (4.21-5.0), the extent to approve strongly, while there are five paragraphs and signed in categorical term (3.41-4.2), which is the extent of approval. That reach the approval of the study sample all the second hypothesis phrases this confirms the validity of the hypothesis (*no effect of the high population density on the behavior of individuals*)

V. DISCUSS THE RESULTS

1. There is the impact of the high density in built environment

* There is the impact of high-density wear on roads and traffic accidents as the number of individuals over a year thus increasing the number of cars with the roads remain the same size

High people density, by providing a greater number of users, would sustain the use of the mass transit system and thus improve its efficiency and viability. Furthermore, high building and people density means that both places and people are concentrated and close to each other. This offers more opportunities for walking and cycling, and therefore would reduce the number of car trips, as well as the travel distance per trip. High people density can enhance the opportunity for using public transit and thus help to reduce the use of private cars.¹⁸

- * There is the impact of high-density drain on resources

Environment affected the way you consume the city's land and other resources urban informal - and growth, both measured by an increase in the numbers

¹⁸ Understanding Density and High Density Vicky Cheng p.15

of the population or the amount of space that is spread by Alepeshr- depends on the land, water and energy from the surrounding areas to meet the needs of humans. And increases dependence on cars and buildings need energy and increasing environmental pollution and destruction of the use of gas and oil and the flow of pollutants in lakes and rivers¹⁹

* There is the impact of high population density on the expansion of the expense of Agricultural land and the mixing of industrial projects with efficient housing

Maintaining agricultural land and lack of urban expansion at the expense of only extreme necessity and in the minimalistic and expansion as much as possible in the desert areas

Redirection of migration away from the densely populated cities and by strengthening the economic base and the infrastructure of some cities, the availability of consumer needs and entertainment services, all of which say what will be in the countryside and is grounds for attracting more population groups that seek to stability in the social milieu advanced

* There is a statistically significant effect on the rising prices and the depreciation of buildings has structural

Maintenance costs and higher depreciation and structural restoration of the buildings and the difficulty of expanding horizontally or vertically, which led to the increasing demand for housing and the next rising housing prices²⁰

* There is a statistically significant effect on the difficulty of inferred housing

Renewal of worn-out areas of the city to improve health conditions by providing better living conditions for residents by replacing older units desolated and spam and improve service delivery and improve the environment²¹

2. there is the impact of the high density on human behavior

* There is a statistically significant effect of the high density of the high crime rate and lower the level of security in the region.

There is a clear relationship between the physical environment of the home and educational attainment of the children to Congestion caused by the home of the lack of privacy and noise and turned into a home environment Repellent lead to leakage of the children to the street, which could lead to a deviation of the children toward crime²²

¹⁹ Cities dimensional environment and humanitarian planning Author: Lao Marcia p43

²⁰Social inhabitant, Rania Mohammed Ali Taha 2010 mutual influence between Allowaf urban housing and cultural identity

²¹ Dr. Malik Ibrahim and Dr. Mohammed al-Obeidi Urban planning and humanitarian problems, p 481

²²Social inhabitant, Rania Mohammed Ali Taha 2010 mutual influence between Allowaf urban housing and cultural identity

* There is the impact of high-density on the use of alternative means of transport

There are many methods in the style of addressing urban land use can reconcile the communities and transport considerations growth will need and, in particular renovation followed the old laws on zoning, (have planners continued in most industrialized countries in the West to isolate homes for the workplace and in spite of it far longer pose a threat to the health, Vtahjr residential areas during the day and keep the workplace free at night and some areas do not increase too much on being the ways

* The key to the success of the division of integrated areas as a strategy for the transfer is to encourage dense urban development enough to promote alternatives to cars in compact communities can be a lot of activities grouped in the range of distance can be traversed on foot or riding a bike²³

* There is the impact of the high density of the few open areas of social relationships between individuals

Territory in large cities is limited.. Every person needs a space free of noise, interruptions, and contact with others. Note in high densely populated areas few areas that promote social relations. Most people in these areas live in apartments. This gives an indication of the low number of areas of communication between people in areas that contain density A high security factor that reduces the area's environmental psychology may determine in the future what designs will help to alleviate the stresses of population density. The non-application of laws and codes for the design of residential neighborhoods according to the residential housing density led to the lack of services in the residential neighborhoods of green spaces, children's games and infrastructure For land in large cities is limited. Most people in densely populated areas have no land to protect

Obviously every person needs their space that is free of noise, interruption, and contact with others. Living is full of options for contact with other people, when those options are taken away by population density, people will feel the anxiety build. Every person has to have a measure of privacy and personal space. Environmental psychology may determine in the future what designs will help to alleviate the stressors of population density.²⁴ Not to apply the laws and codes for the design of residential neighborhoods by density residential neighborhood led to the lack of services in the residential neighborhoods of green spaces and Kids Games and infrastructure

²³ Cities dimensional environment and humanitarian planning Author: Lao Marcia

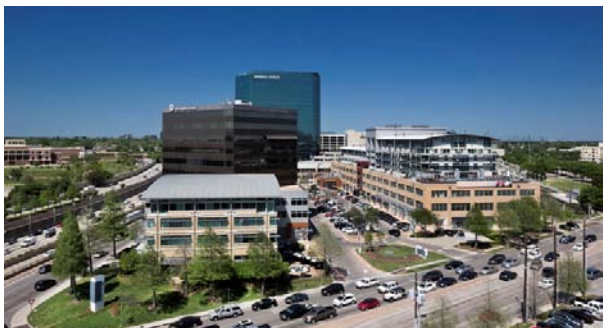
²⁴ Page, Richard A. (1977). *Noise and Helping Behavior*. Retrieved on June 13, 2010 from <http://140.234.1.9:8080/EPSessionID=19913e563c67577d812f76d2350dbcf/EPHos>

* There is a statistically significant effect on increasing environmental pollution. Massed the proportion of individuals at risk of developing respiratory disease.

The problem of noise and pollution is one of the most important problems that are clearly visible in areas with high population density, which increases the possibility of respiratory diseases and damage to the built environment. This is evident from the emissions of cars due to the increase in the number of cars in Amman due to the increase in population.²⁵

VI. RECOMMENDATIONS

A scientific international case study has given solutions to reduce the traffic in high density region (Mockingbird Station)



This project illustrates one of the proposed solutions that can be used in Jordan to minimize the impact of high negative population density on the built environment and the behavior of individuals. Where the functions are integrated with housing, these multi-use neighborhoods make it easy for people to park their car in one place and accomplish many tasks, so less impact of pollutants on the car environment. It is a city that promotes walking, where all the facilities combine the same place from the center of the cinema, commercial buildings, and others. Dallas Express Transportation car trips required but also reduce overall parking needs for the community. But if retail uses are to survive, they must be near households with disposable income. Having those households within walking distance of the shops builds a market for the stores. One study indicates that in some markets, 25 to 35 percent of retail sales must come from housing close to shops for the shops to be successful.

A scientific international case study has given solutions to reduce the crimes in high density region (Westminster Place)

Although today Westminster Place is a thriving, safe community in midtown St. Louis, it was not always the case. The area, approximately 90 acres, was well known by the St. The solution that has been used in this area to reduce the crime rate to contain this area on a

large population is to develop a new plan aimed at slowing traffic through the community, Streets, parking lot lighting, "new eyes on the street," Making it difficult for criminals to notice unnoticed.

The area flourished to a place where people were back. Feel safe walking. Successful community success in revitalizing the surroundings²⁶. Increasing the housing density, adding some market-rate housing, And developing a design that slowed traffic and added additional Lighting changed Westminster Place from a crime-ridden neighborhood To a thriving, safe community.

a) Environmental Solutions To Urban Problems

*Providing parks and urban gardens can cure many of the ails of cities that have high population density that affect on human behavior. Cities need to provide a variety of green areas

- Specialized parks and cultural centers (botanical gardens, zoos, and aquariums)
- public parks to support sporting events and passive activities
- Private gardens. The presence of trees and maintained grassy areas increases feelings of safety in inner city neighborhoods.

*level of play children, supervision by adults and creativity of play doubled in areas with green grass and trees compared with barren areas. Play activity has great significance for children it is a way to learn about the world. Play grounds may be better used and more important in cities than in small towns, because there is less space for children in cities.

There are three types of playgrounds: traditional playgrounds, contemporary playgrounds, and adventure playgrounds.

**Traditional playgrounds*: contain standard apparatus (swings....) concrete paving) and low aesthetics.

**Contemporary playgrounds*: same as traditional designing but more aesthetics and abstract shapes, a single apparatus serves multiple functions.

**Adventure playgrounds*: begun in Denmark, encourage children to use scrap wood and their cast of material to build their own world of fantasy, tools are supplied (hammers....), children build and modify structures, needs adults supervision. Support more fantasy and richer cognitive experience

b) Urban Renewal and Revitalizing

**Urban renewal*: an integrated series of steps taken to maintain and upgrade the environmental, economic and social health of an urban area. Started with the city beautiful movement, while more modern initiatives focus

²⁵ What are the Effects of Population Density? January 11, 2017

²⁶ Haughey, Richard M. *Higher-Density Development: Myth and Fact*. Washington, D.C.: ULI—the Urban Land Institute, 2005.

more on decaying residential and commercial parts of cities: demolishing neighborhood and resident which may destroy a functioning social system and sense of identity of its old residents. Allocated residents may stay depressed two years after moving.²⁷

c) *Smart Growth*

An urban planning and transportation theory that concentrates growth in compact walk able urban centers to avoid sprawl. It also advocates compact, transit oriented, walk able, bicycle friendly land use, including neighborhood schools, complete streets, and mixed use development a range of housing choices_The Principles of smart growth are Mixed land use, Take advantage of compact building design, Create a range of housing opportunities and choices, Create walk able neighborhoods, Foster distinctive, attractive communities with a strong sense of place, Preserve open space, farmland, natural beauty, and critical environmental areas, Strengthen and direct development toward existing communities, Provide a variety of transportation choices, Make development decision predictable, fair, and cost effective and Encourage community and stakeholder collaboration in development decisions

d) *Pedestrian environments*

the use of pedestrian malls to enhance city life, a street in a commercial downtown area is blocked off and turned in to a plaza for pedestrians to: Beautify the area, Reduce traffic congestion and Encourage commerce in deteriorating areas. Designs that reduce the perceived density could be associated with less crowding and negative effects .High rise buildings are associated with greater feelings of crowdedness and less perceived control, safety, privacy and satisfaction with relations with other residents than low rise buildings²⁸

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Development of Residue Management Unit for Direct Seeding in Rice Fields

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Abstract- Conservation agriculture is becoming increasingly important and it is being practiced to varying degrees in different countries to save production costs and generate more income. Wheat direct seeding in combine harvested rice fields is away to practice conservation agriculture in Egypt. The main operational problem in direct seeding in paddy straw residue is the accumulation and wrapping of loose straw on the tines of no-till drills. So, residue management unit was developed to overcome problems arising while sowing wheat in combine-harvested rice fields. The developed unit consists of two powered wheels. One wheel for cutting the residue and the other one for removing them away from no-till drill furrow openers. The experiments were carried out at Department of Agricultural Engineering, Faculty of Agriculture, Kafrelsheikh University, Kafrelsheikh Governorate during the years of 2014 and 2015.

Keywords: residues management technique, not-till drills, conservation agriculture.

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Development of Residue Management Unit for Direct Seeding in Rice Fields

Rashad Hegazy

Abstract Conservation agriculture is becoming increasingly important and it is being practiced to varying degrees in different countries to save production costs and generate more income. Wheat direct seeding in combine harvested rice fields is away to practice conservation agriculture in Egypt. The main operational problem in direct seeding in paddy straw residue is the accumulation and wrapping of loose straw on the tines of no-till drills. So, residue management unit was developed to overcome problems arising while sowing wheat in combine-harvested rice fields. The developed unit consists of two powered wheels. One wheel for cutting the residue and the other one for removing them away from no-till drill furrow openers. The experiments were carried out at Department of Agricultural Engineering, Faculty of Agriculture, Kafrelsheikh University, Kafrelsheikh Governorate during the years of 2014 and 2015. Experiments conducted in locally manufactured open-air rectangular soil bin to develop and test a prototype of residue management unit and to optimize its operational parameters. Three variables (Wheel rotational speed, angle of wheel and concentration of the residues) were taken. The results showed that using 5.4 km/h as rotational speed gave best results for cutting and removing the residue. The amount of residues clogged within the equipment decreased by increasing the rotational speed and lowest values obtained by adjusting the wheels with 20 ° degree. While, increasing the rotational speed continuously increase the residue flow.

Keywords: residues management technique, not-till drills, conservation agriculture.

I. INTRODUCTION

High levels of crop residues present a constraint to the adoption of conservation tillage because residues mechanically interfere with seeding operations. Improved seedling equipment or residue removal may be necessary for successful direct drilling practices (Carter, 1994). The collection of straw after paddy harvesting is uneconomical and its end use is not yet wide spread. So, either residue is incorporated in the soil or burnt in the field. Incorporation of straw in soil has got some advantages in improving the soil fertility and yield. However, this process needs many operations which involve both time and money of the farmers and it delays sowing of wheat crop. According to Beri and Sidhu (1999) huge amount of straw is being burnt off annually as a waste product, which creates environment pollution. Burning also decreases the efficiency of some weedicides used for controlling weeds during wheat growth. Also, significant quantities of valuable biomass

would have been lost due to burning. In heavy crop residue, or when row spacing is narrow, Hoe, chisel, winged chisel, and inverted T type drills are prone to blockages between adjacent openers (Wilkins et al. 1983 & Slattery, 1998). They also tend to cause large clumps of residue to form (Slattery and Riley, 1996). This adversely affects seeding depth uniformity, which is important for optimum seedling emergence and maximum yield of many crops, including cereals (Morrison & Gerik, 1985). An approach that has not been well explored is the use of powered devices to move the residue. Powered residue manipulating devices also offer flexibility in design alternatives. They could be designed to skim above the ground to avoid soil disturbance and are not limited in speed to the drill travel speed. With speed and control over the direction of rotation a variety of residue cutting, chopping and pushing devices can be considered. Furthermore, a powered device can be adjusted to direct residue where desired.

II. MATERIALS AND METHODS

a) Design considerations and concepts

From literature review, it is clear that the main operational problem in direct drilling is accumulation of paddy straw residues. The machine, therefore, needs to be designed and developed on the basis of cutting and removing of paddy straw away from the no-till drill. In order to facilitate the movement of straw, two processes are needed one for cutting the residue and the other for removing them. The importance of the residues cutting include reducing the length of loose straw and cutting stand stable which may be laying in front of no-till drill but still connected with the soil. To facilitate direct drilling practices, four basic patterns of coulters are available in the market: smooth, notched, ripple, and wave. These coulters have operational problems and usually do not cut the residue efficiently so, new design is needed for cutting wheel. Removing the residue as the second process very important in order to reduce the amount of residue clogged on furrow openers and make the line of sowing clear and clean from residues which affect no-till drill performance (Wilkins et al. 1983; Slattery, 1998; Slattery and Riley, 1996; Morrison and Gerik, 1985). The other important concept is that the residue management device should be powered to overcome the problems which were found with using passive devisees.

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b) *Functional Design Requirements of the Residue Management Prototype*

The various functional design requirements of the prototype are; it should be able to cut and remove residues from front of the furrow openers of the no-till drill; the shape and dimensions should be suitable for wheat sowing conditions and the no till drills; and power transmission should be adjustable, optimum rotational speed of the device should be used

c) *Design and theoretical consideration for cutting and removing wheels*

The design of cutting wheel is based on the idea that using star shape wheel (teeth) would essentially work as a narrow tool, but with a forward and rake angle as described by McKyes (1985). This will impart greater momentum to the wheel than that obtained with a smooth, waved, notched and ripple edged which commonly used to cut plant residues (Desbiolles, 2004). Besides, the wheel would penetrate the soil more easily and require less vertical force. The toothed wheel will cut the residues only if it penetrates the soil with little depth and rotates. This will happen only if there is enough vertical pressure from the wheel and a corresponding soil resistance to the draught force due to the action of the teeth. This can happen if we provide a power source to rotate the wheel with specific rotating speed and fixed position. For adjust the suitable distance between two consecutive teeth, one tooth should touch the residue surface when the previous one penetrate the soil (Bianchini, 2002). Keeping the above aspects in view, the present work was undertaken to develop a residue management unit for a no-till drills with the optimization of its operating parameters under soil bin conditions.

For designing the cutting wheel under above consideration, the calculation and assumptions based on standard machine design book were followed. Outside diameter for the cutting wheel was 320 mm, and the suitable number of teeth was 23 with 35 mm length for each edge. Also, to design present removing wheel, both curved fingers and wheel angle should take in consideration with adjusting the dimensions to attach this wheel with the cutting wheel. So, diameter of removing wheel was less than diameter of cutting by 20 mm to prevent soil-wheel interaction. The number of the finger used to manufacture the removing wheel was 12 with 30 mm length occupied with 40 x40 mm depth and width curved cross-section. The fingers were curved with 15 degree and the overall diameter was 300 mm and the fingers spaced equally around its perimeter. The material used for manufacturing the removing wheel was mild steel with 2 and 4 mm thickness. Both cutting wheel and removing wheel attached together in one unit as double wheel for testing in soil bin (Fig. 1).



Figure 1: Locally manufactured cutting and removing wheels

d) *Dynamic laboratory experimental variables and treatments*

The experiments were conducted at Department of Agricultural Engineering, Faculty of Agricultural, Kafrelsheikh University, Egypt. The experimental set-up for soil dynamic laboratory studies comprised a rectangular soil bin and an experimental unit. Establishment and manufacturing of a modern soil bin have been carried out to test a modified set of residue management unit which have been designed and manufactured. To run required experiments with defined variables and treatments and according to the dimensions of designed unit, a set-up for soil dynamic laboratory including soil bin have been prepared. The designed soil bin done to make it multipurpose with dimensions of 10 x 1.5 x 1.2 m as length, width and height respectively. Soil bin has free capacity of 18 m³ and prepared to contain most available soil and media under different conditions. The soil bin was rectangular in shape and withstand under heavy conditions with multi-duty facilities. Materials used to manufacture such soil bin were steel, cast iron, hollow sections iron, wood, railway type move and wheels. Additional frame have been manufactured and used to carry required movable material and units, with dimension of 1.5 x 0.7 x 0.5 as width, length and height respectively and to be movable above the main frame of the soil bin. High quality materials and equipment used to provide the soil bin with required movement and desired arrangements. Two different motors and 5 hp inverter have been used to provide the required movements of the carriage during test. Soil bin' floor and walls covered by beech wood and plastic sheets to maintain the water and drainage. Electrical connections and circuits have been

done carefully and with standards to control all movements and motors in on control unit attached to the bin (Fig. 2).



Figure 2: Installing soil bin and attached control units and motors

e) *Soil dynamic laboratory experimental variables*

After installing the soil bin and its required connections and set-up, test of previously manufactured residue management unit followed the preparation as soil dynamic test under different variables and measurements as proposed to optimize the parameters of the residue management prototype. The experimental soil was dried to the initial moisture content and crushed to a fine uniform size before it was put into the soil bin. Experiments were conducted first in the driest state and water was added for the consequent runs until the moisture content of the soil reached an equilibrium state, The soil processing trolley was used for processing the soil mechanically in the bin in order to achieve uniform soil condition as desired for test-run

throughout the soil bed. A reasonable agreement was found in the compaction level at the different locations along the length of the bin, this was achieved by rotavating the soil and passing the roller over it for a fixed number of times usually between 2 to 4. The cone penetrometer was used to monitor the uniformity of the prepared soil by comparing the cone indices of the sampled sites. After the soil processing was over, the residue management unit was mounted at desired depth and tested under variability of its angle (four levels of wheel angle 10°, 15°, 20° and 25°) and speed (2.52, 3.96, 5.4 and 6.31 km/h) to determine the best angle and suitable speed for residue management unit under two residue density and deferent conditions.

f) *Soil and Residue Preparation*

The soil was tilled and puddle in soil bin in presence of adequate water and the roller was passed up to 6 times. Thereafter, the soil bin was left to dry until the puddled soil moisture reached 15-16 percent and penetration resistance of about 0.84 MPa. At this moisture content, the soil reached to its friable range and cracks developed on the soil surface. Surface residue density was created by hand harvested wheat stalks. This was sun dried to the moisture level of 10-12 percent (w.b.). In soil bin the dry wheat stems of uniform length (450 mm) was cut and made in a lot of 100 pieces. It was weighted and laid in front of residue management device perpendicular to line of travel, covering surface area in such a way that necessary residue concentration can be created over the soil surface. Movable carriage with dimension of 1.5 x 0.7 x 0.5 m as width, length and height respectively to move above the main frame of the soil bin has been manufactured (Fig. 3).



Figure 3: Attaching residue management unit on specified carriage for testing

g) *Measurement of Soil Moisture Content, Bulk Density and Cone Index*

The measurement of soil moisture content and bulk density was done in soil dynamic lab by collecting soil samples with the help of standard core sampler. The moisture content and the bulk density were determined on dry weight basis by adopting oven dry methods. For measuring the soil strength in soil bin the

cone index of soil was measured, which is defined as the resistance offered by the soil to push a standard cone penetrometer into the soil. The used device was cone penetrometer Baker (Type J12) ISI-IS 2092 having capacity of 1.3 kN to 2.21 kN and 0.002 mm to 5mm of cone base and about 20° cone angle

h) Measurement of Residue Cutting, Residue Clogging and Residue Flow

Wheat straw of uniform size and hundred in number were placed centrally and perpendicular to the line of travel in front of the double wheel. After every pass the numbers of cut pieces of stalks were noted. Residue clogging was calculated as a number of wheat stalks remained entangled around the residue management device after every pass. Residue flow was calculated by determining the average distance which the residue moved from center line of travel.

III. RESULTS AND DISCUSSION

a) Effect of wheel rotational speed, wheel angle and residues density on residue cutting

The number of residues cut pieces was observed and expressed as percentage (Fig. 4 and Fig.

5). The results showed that increasing the rotational speed from 2.52 to 3.96 km/h and from 3.96 to 5.4 km/h increased the percentage of residues cutting by 24.2 and 34.4 % respectively at 20° of wheel angle and low density condition of residues. However, increasing the speed further decreases the percentage of cut residues. It may be due to the shortage of time need to cut the residues when the speed was high.

Best cutting percentage obtained by using equipment under 5.4 km/h rotational speed with 20 degree wheel angle where the cut residue percentage increased by 4 and 8 % when the wheel angle increased from 10 to 15 and from 15 to 20 degree respectively at 5.4 km/h rotational speed and high residue condition,. The cut pieces always less in case of high residues density compared to the low density.

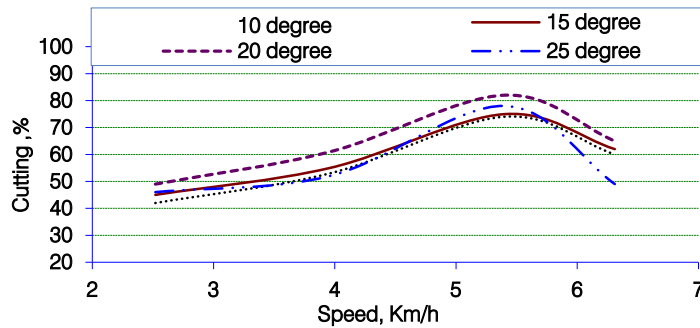


Figure 4: Effect of wheel rotational speed and wheel angle on residue cutting at low residues density

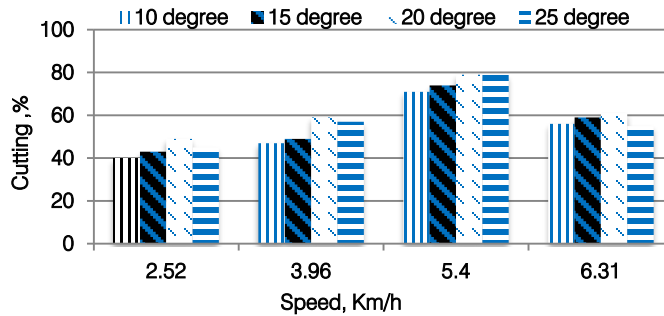


Figure 5: Effect of wheel rotational speed and wheel angle on residue cutting at high residues density

b) Effect of wheel rotational speed, wheel angle and residues density on residue clogging

The amount of residue clogged was observed and presented in Fig. 6 and Fig. 7. The results showed that the amount of residue clogged was more under low and medium speed, while it decreased by 6.25 % and 28 % when the speed increased from 2.52 to 5.4 km/h. and from 3.96 to 5.4 km/h respectively at 20° wheel angle under low residues density condition.

Changing the wheel angle from 10 to 25 degree has no significant effect on the percentage of clogged

residues. But the high density of the residues gave more clogged residues than the low density.

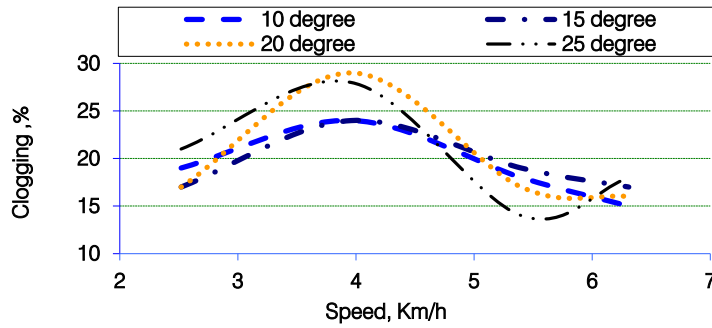


Figure 6: Effect of wheel rotational speed and wheel angle on residue clogging at low residues density

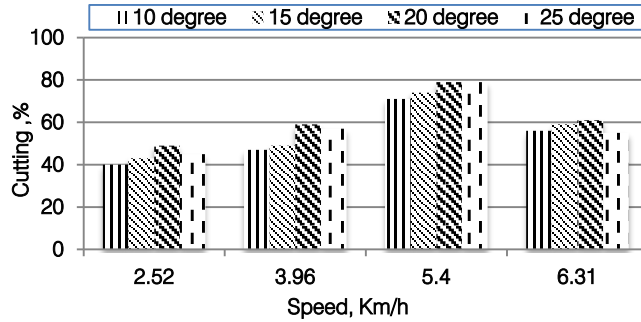


Figure 7: Effect of wheel rotational speed and wheel angle on residue clogging at high residues density

c) *Effect of wheel rotational speed, wheel angle and residues density on residue flow*

The distance of residue flow out from the center line of traveling increased from 5 to 7 cm and from 7 to 14 cm by increasing the rotational speed from 2.52 to 5.4 km/h and from 5.4 to 6.31 km/h rotational speed respectively at 20 ° wheel angle under low residues

density condition. The best results obtained by using 5.4 km/h rotational speed and 20 degree angle of the wheel which gave flow around 7 cm where the residue can remain between two furrow openers (Fig. 8 and Fig. 9). While the flow distance more than 7 cm will move the residue into the furrow opener line.

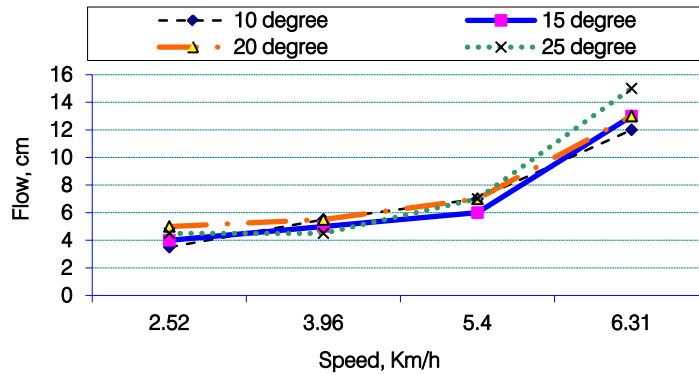


Figure 8: Effect of wheel rotational speed and wheel angle on residue flow at low residues density

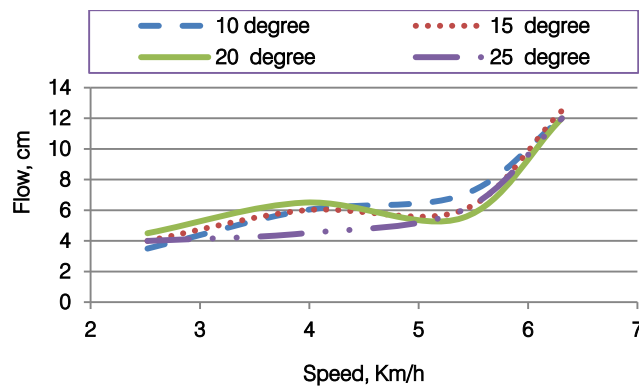


Figure 9: Effect of wheel rotational speed and wheel angle on residue flow at high residues density

IV. CONCLUSION

Increasing the rotational speed up to 5.4 km/h increased the percentage of residues cutting, while increasing the speed more than this decrease the percentage of cut residues. Using the residue management device with 5.4 km/h and 20 degree for the wheel gave good results in decreasing the amount of clogged residue. The suitable flow for the residue was around 70 mm which obtained by using the residue management device with 5.4 km/h and 20 degree for the wheel. The developed unit can be easily attached to any no-till drill with flexibility in assembling.

V. ACKNOWLEDGMENT

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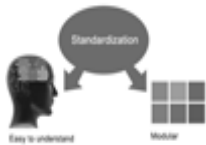
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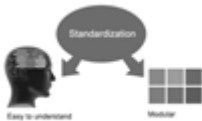
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11. Revise what you wrote: When you write anything, always read it, summarize it and then finalize it.



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.

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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.



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 through 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.



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To make a paper clear

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Mistakes to evade

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

Title Page:

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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.

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- 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
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- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
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- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
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Approach:

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- 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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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.

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- 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.
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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.



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.
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- 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.

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- 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
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- 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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<i>Methods and Procedures</i>	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
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<i>References</i>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring



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