

Microsoft Word or Google Docs: A Comparative Study of Performance

David Kweku Asare Robertson¹ Ahmed Hassane Ahmed Dabouga²

^{1,2}Symbiosis Institute of Computer Studies & Research (SICSR), Symbiosis International University (SIU), Atur Centre, Gokhale Cross, Model Colony, Pune-411 016, Maharashtra, India

Abstract— Word processing software have been with us since their introduction in the 1960s, being primarily standalone machines in the early stage that had been invented to rival and even quickly replace the mechanical typewriter. This was one of the first shifts from the electric and mechanical to the electronic and digital phase of life leading many other appliances to follow which has become the norm of the generation as time goes by. This research paper ultimately leads to the view on how Google Docs trumps the performance of Microsoft Word as its conclusion but still addresses most of the concerns of individuals concerning the use of both Microsoft Word and Google Docs applications comparatively to help draw personal conclusions on which is better for personal, business and academic needs.

Key words: Microsoft Word, Google Docs, Web 2.0, Web Application, Word Processor

I. INTRODUCTION

The most used word processors are Microsoft Word, an application software developed by Microsoft as part of the Microsoft Office Suite and Google Docs, a web-based application developed by Google as part of G Suite. In this paper, we present an approach on viewing the performances of both Microsoft Word and Google Docs from a general and technical point of view.

The prevailing decision for the shift from the typewriter to the word processor is how easy it was to make changes without having to retype the entire document. The invention of the word processor has had an evolution of functions over the years from simply writing, editing and storing text documents to printing, copying, pasting, moving,

deleting, formatting texts and has now gone as far as correcting spelling and grammar, creating tables, shapes and even adding illustrations of other file types.

The primary objective of this research is to apply the usage of the Microsoft word and Google docs and see the performance in order to identify the best and the preferred word or text processor and possibly recommend or suggest it.

A. Microsoft Word

Microsoft Word is one of the most useful software in the world the program is used by educators, students, businesses and enterprises. While it is very common for schools, companies, and offices to have the program installed on their computers; the desktop application is also built and designed for personal use, it is useful to help users view, edit, create, and share documents. Furthermore, the software comes with all the document editing functionalities that users need to complete their desired text format.

B. Google Docs

Google Docs is a web-based application that serves as a word/text processor developed by Google. It is a platform for word processing functions with the intention that should in case a user not have access to a desktop word processor but an online connection. It is also dynamic in that it can be used for personal reasons such as for work, for school and even personal purposes. Google Docs also enables collaboration between users, because the document is saved in the cloud, the creator can share the link to the file for editing to other users. Google docs always saves the document automatically and the user does not need to worry about it and that is the main point that people like Google Docs.

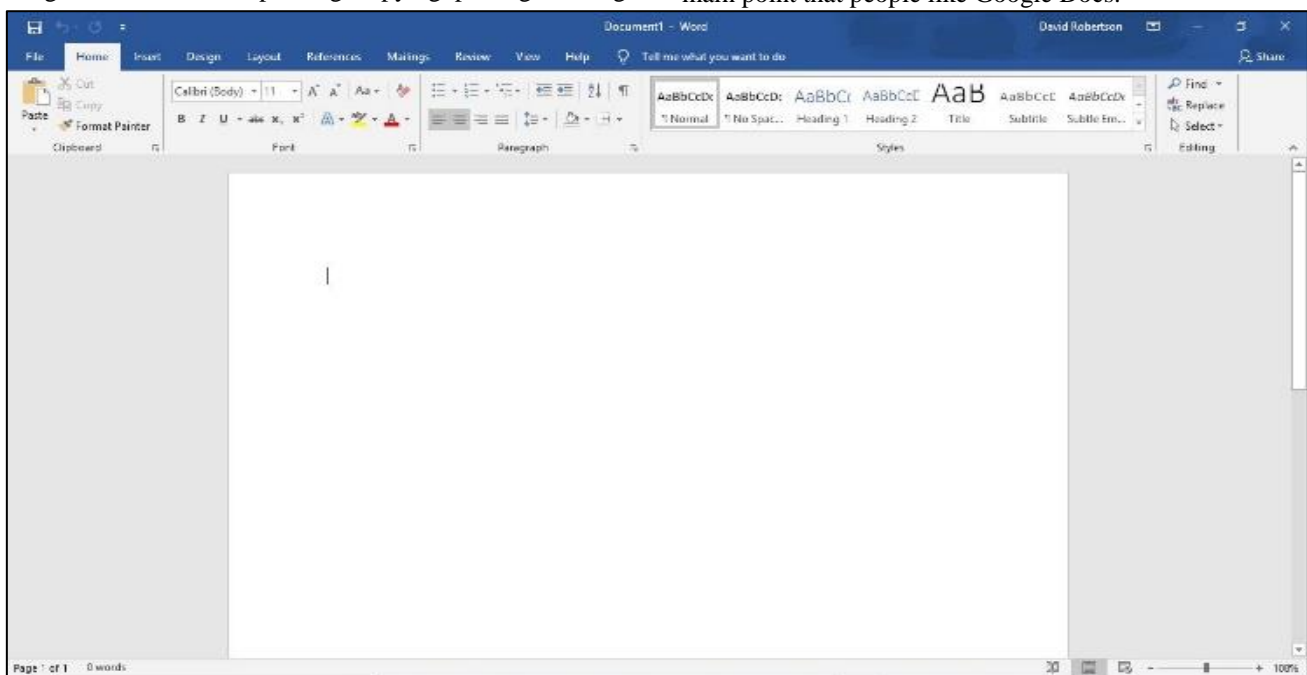


Fig. 1: View of a New Microsoft Word 2016 document

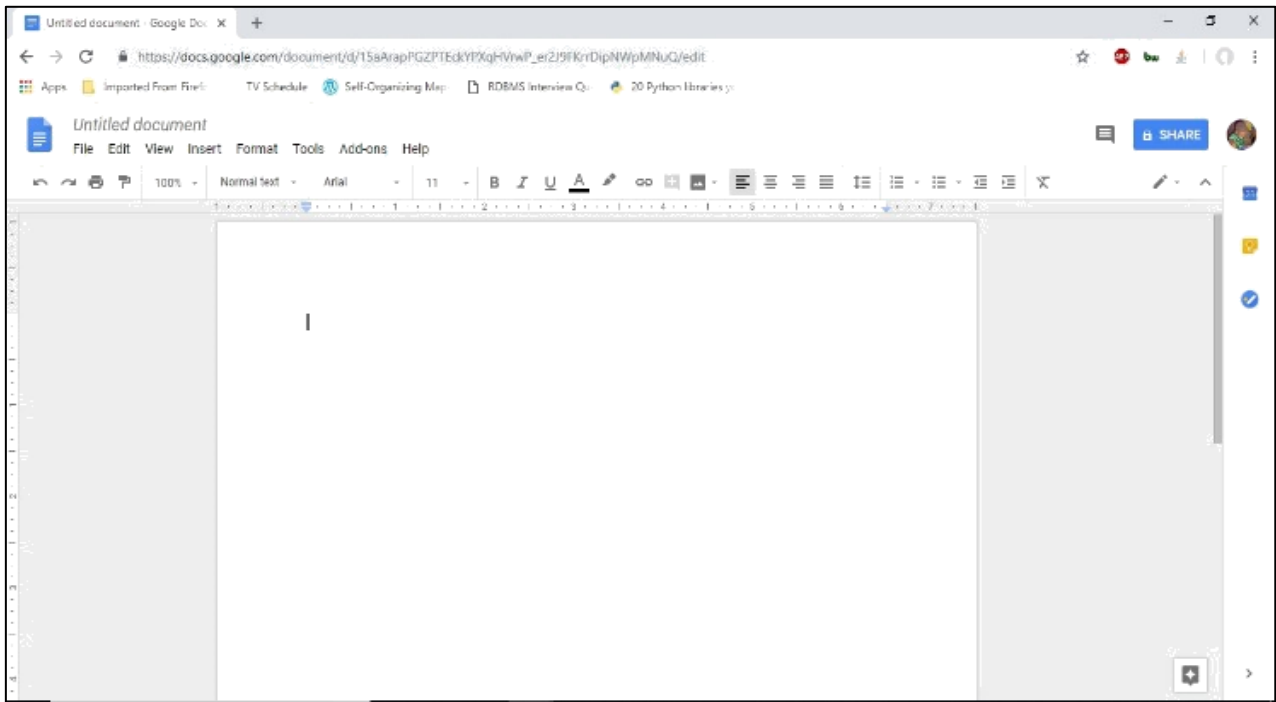


Fig. 2: View of a New Google Docs document

II. METHODOLOGY

In this part we have clearly stated the research methodology taken and used in pursuit of our objective. The various ways adopted in gathering such information to undertake this paper in draw a reliable conclusion is:

- 1) General knowledge of Microsoft Word and Google Docs. In this part we stated the various benefits and shortcomings of each application independent of each other respective of their individual performance.
- 2) Features. We created a table of their general features comparing one to another in order to determine which one has the most number, the most useful and the most efficient.
- 3) Sample document. A sample document was created with respect to their technical features and both applications were launched a number of times. The launch and extensive view of both applications with the sample document was in order to determine which one worked better against multiple questionnaires set.
- 4) We used citations, books and other references regarding the topic and keywords which helped us genuinely understand what type of questions and responses we should ask and check for during performance tests.

III. ANALYSIS/COMPARISON

In this research paper, we have taken both word processing applications and how they respond.

A. Microsoft Word

Microsoft has been moving towards the Software as a Service model, offering a mix of web and desktop applications to consumer and business clients. [3]

In 2007 Microsoft's consumer web application efforts were concentrated under the "Windows Live" brand and organized in the "Online Services Business" unit. A web-

based version of its office products, branded "Office Live" was launched but discontinued and superseded by "Office 365" in 2010, developed in the "Microsoft Business Division" the same division of the Microsoft organization responsible for the desktop version of its application suite. It has also taken steps to copy Google's entire product line, including online search and advertisements.

Microsoft's main customers are still willing to pay for performance improvements along established criteria. However, the lock-in of the current user-base could possibly provide an alternative explanation for the continuous acceptance of higher prices and additional features. Google's distinct business model and processes built around its web-based services amount to a clear disruptive threat. Microsoft has reacted by copying Google's product offerings and partly shifting its business model. [3]

1) Search for Content and Add Citations.

Microsoft Word offers a feature called Researcher which helps users search for information, images, or materials they need for their research paper or any document they are working on. What's great about this feature is that it provides users the option to add citations to their document as they bring in content and information from the web. They will be able to incorporate reliable sources for their document without leaving the program. After they added a content to their documents such as a text or an image, they will be able to automatically update their existing library. (6)

2) Advanced Proofing Tools

Microsoft Word is also equipped with advanced proofing tools that enable users to polish their documents. With these tools, they will be able to fix grammar errors and misspellings. In addition to that. The program has the capability to suggest ways to enhance their writing style. (6)

3) Robust Formatting Tools

In order for users to create more impactful documents, Microsoft Word offers robust formatting tools they will be able to adjust paragraph alignment, change line

spacing and font style/size, create bulleted and numbered lists, add headers and footers, and insert items in a document such as pictures or tables. (6)

4) *Work with PDFs*

The program also supports editing of documents with PDF file format, users can edit the content of a PDF file in Microsoft Word like paragraphs, lists, and tables. Once they're done applying changes to the PDF, they will also be able to save it either as a PDF or Word document. The good thing about this is that as if the PDF document has been originally created in Microsoft Word. (6)

5) *Mail Merge*

Mail Merge is used to create multiple letters, labels, envelopes, and name tags that have the same layout, formatting, text, and graphics but contain sections that are personalized for each recipient. These sections include the address, greeting line, and recipient's name. (6)

6) *Real-Time Collaboration*

Microsoft Word offers collaboration tools and features. One of them is capable to make discussions by enabling team members, users and stakeholders to add comments right next to the documents they are working on. Also, they will be able to track all the changes made to a document using the Track Changes feature of the program. (6)

7) *Word Mobile App*

Using Mobile app, creating and editing documents can be done anywhere. Users can access and manage their documents from their mobile phone or tablet, and they will also be able to work together on their projects as a team at whatever time and from wherever they are. (6)

B. *Google Docs*

A web application is a program running on a central server on the Internet and accessed via a web browser.

Data and programs are being swept up from desktop PCs and corporate server rooms and installed in "the compute cloud." Whether it's called cloud computing or on-demand computing, software as a service, or the Internet as platform, the common element is a shift in the geography of computation. [1] Google offers online storage of documents up to a maximum of 5,000 documents or presentations. This is a service now available from a variety of companies, some of which, such as box.net and omnidrive, specialize in providing (free) document storage. [5]

When you create a document with the Google Docs service, major components of the software reside on unseen computers and servers, possibly scattered across continents. The shift from locally installed programs to cloud computing is the current major technological move when it comes to applications. [1]

1) *Smart Formatting*

Google Docs provides dynamic editing and styling tools to users. These allow them to make documents that reflect the formatting they wish to have and let create a document that is readable and interactive.

Google Docs also provides access to a platform of fonts and other tools that enable users to add links, images, and other media within their document that they are using for their need and implementation. (6)

2) *Ready-Made Templates*

Sometimes, people can be in a hurry to write documents that must be developed in a certain way, such as resumes and application letters, etc... Google Docs offers various document templates that users can be easily edited and used. (6)

3) *Accessible Solution*

Google Docs documents can still be accessed and edit without being online. In that case, users can also remain able to create new files. In addition to that, the application is available for smartphones, tablets, and computers so users can take it with them and be productive wherever they go. (6)

4) *Collaborative Platform*

Google Docs enables user to edit a document at the same time and leave comments and suggestions to be reviewed, accepted, or rejected. (6)

Microsoft and Google have become rivals in in the eyes of consumers over time due to their competing products of similar purpose.

One of the major developments of Web 2.0 is the increase in availability of tools and services that are accessed directly through a Web browser rather than residing on the user desktop, hence the shift. [5]

Examples,

Job/Product	Word Processing	Web Application
Word Processing	Microsoft Word	Google Docs
Spreadsheet	Microsoft Excel	Google Sheets
Presentation	Microsoft PowerPoint	Google Slides
Email	Microsoft Outlook (Live mail)	Gmail

C. *General Features*

Microsoft Word	Google Docs
Platform/Devices Supported	Platform/Devices Supported
<ul style="list-style-type: none"> - Windows - Linux - Mac - Smart phones 	<ul style="list-style-type: none"> - Smart phones (via Internet connection) - Web-based
Language Support	Language Support
Over 80 languages including	Over 62 languages including
<ul style="list-style-type: none"> - Afrikaans - English - French - Arabic - Dutch - Hindi - Spanish - Portuguese - Russian - But only 16 languages on Mac OS 	<ul style="list-style-type: none"> - Over 62 languages including <ul style="list-style-type: none"> - English - Spanish - Portuguese (both Brazil and Portugal) <ul style="list-style-type: none"> - Hindi - Also includes Cyrillic and Devanagari (Nagari in India)
Pricing Model	Pricing Model
<ul style="list-style-type: none"> - Annual/Monthly/One-time payment 	<ul style="list-style-type: none"> - Small/Medium/Large Business - Freelancers

Customer Types	Customer Types
– Small/Medium/Large Business	– Small/Medium/Large Business
– Freelancers	– Freelancers
Deployment	Deployment

– Cloud Hosted	
– On Premise	– Cloud Hosted
– Open API	

D. Sample Document

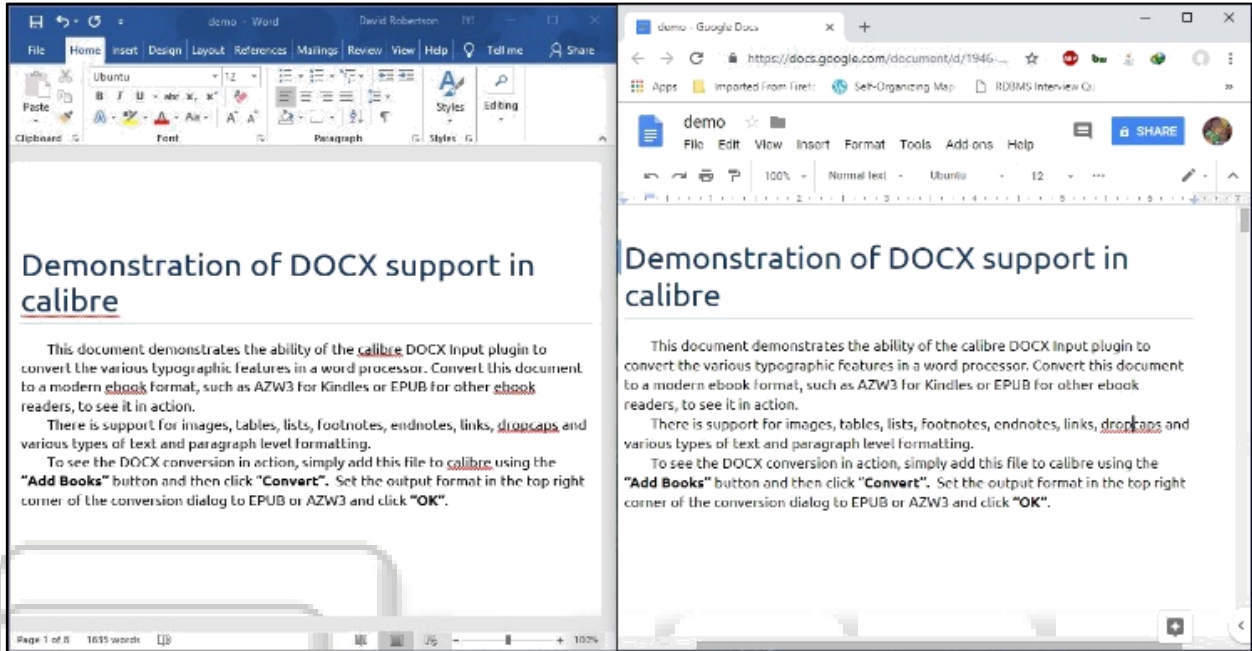


Fig. 3 Sample text document in Microsoft Word (Left) and Google Docs (Right)

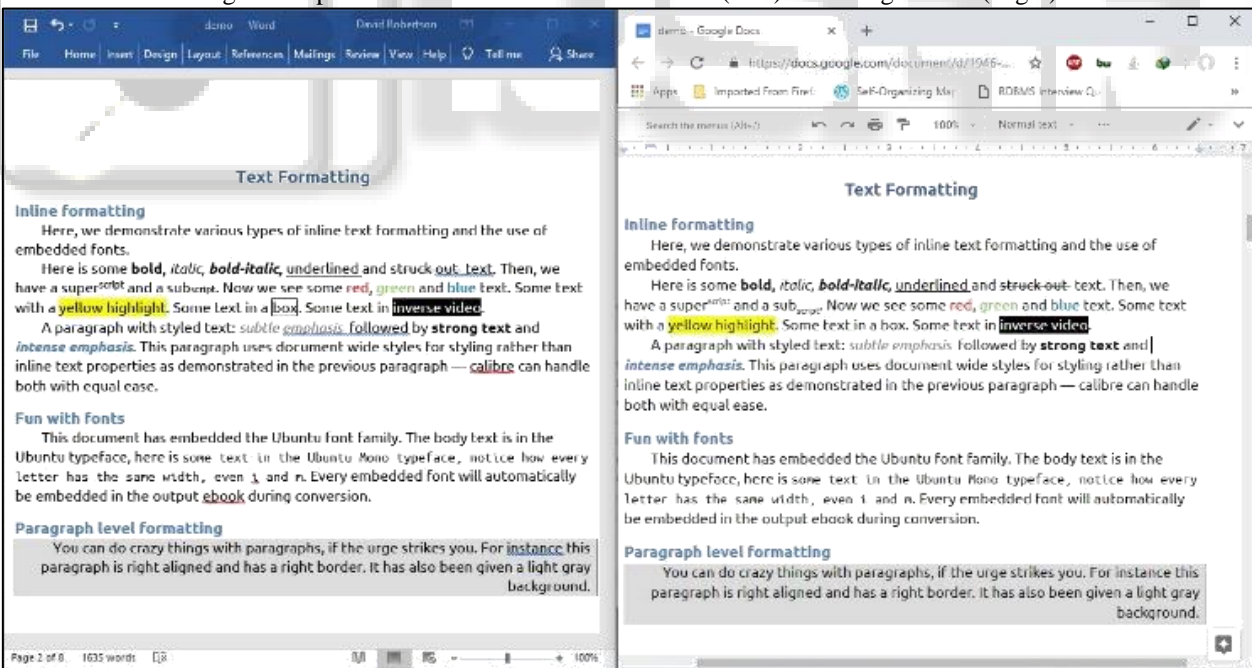


Fig. 4 Sample Text Document in Microsoft Word (Left) and Google Docs (Right)

The Fig. 3 and Fig. 4 are two of the screenshots taken from the sample document used in running the performance tests of the applications.

With this sample document, we run and recorded some tests as well as some features to how each application responded in order to gain a clear measured sense of their

performances side by side on one system and then separately on two different systems.

The observation derived from these various tests are stated below:

1) *Autocorrect*

a) Microsoft Word

The first observation made from the sample document is how MS Word underlines in red the words not recognized by its built-in dictionary.

b) Google Docs

Under this feature in Google Docs most of the wrongly typed words are corrected immediately through the internet since the application is web-based.

2) *Save Format*

a) Microsoft Word

MS Word supports basic text format types when saving a document such as .docx, .doc, .dot, .rtf, .html, .xml and recently added .pdf and .thmx.

b) Google Docs

Google docs also supports basic text file types such as .docx, .doc, .docm, .dot, .rtf, .html, .xml, .pdf and also .html. It has slightly more file types to save in compared to MS Word.

3) *Availability (Online and Offline)*

a) Microsoft Word

This application is a desktop application hence it function well with no need of internet connection. It also has Word Online of the Office 365 suite which also functions well even offline.

b) Google Docs

This web application does well online but does not support offline usage.

4) *Cloud Services*

a) Microsoft Word

MS Word supports cloud services though a number of steps and payments need to be completed in order to use this feature.

b) Google Docs

This is a web-based application hence it revolves around cloud servers which makes it much easier and free to access cloud services.

5) *Document Format*

a) Microsoft Word

With the sample document, the Microsoft Word application shows less designs and its tabs look oversaturated compared to Google Docs.

b) Google Docs

With the sample document, the Google Docs application shows a simple document and tabs with tools that are adaptive according to the user.

6) *User Control (Collaboration)*

a) Microsoft Word

MS Word requires payment for full services and a number of steps in order to use the collaboration mode to authorize users to edit in real time.

b) Google Docs

Google Docs has an easy-to-use and free collaboration mode that can be used and viewed in real time.

7) *Installation*

a) Microsoft Word

This is mainly a desktop application hence does not require the internet but in order to use this user has to install and pay for the whole Microsoft Office suite.

b) Google Docs

This is a web application hence all one needs is a Gmail account and an internet connection on any platform.

8) *Autosave*

a) Microsoft Word

The autosave feature saves a document in a special folder every few minutes when in use.

b) Google Docs

The autosave feature here saves a document every few second as long as it is connected to the internet.

Launch Test	Microsoft Word	Google Docs	Word Online
1	7	4	5
2	6	4	6
3	4	4	6
4	3	5	5
5	3	3	7
6	2	3	6
7	2	3	6
8	2	3	7
9	2	3	7
10	2	3	5
Average Launch Speed	3.3	3.5	6

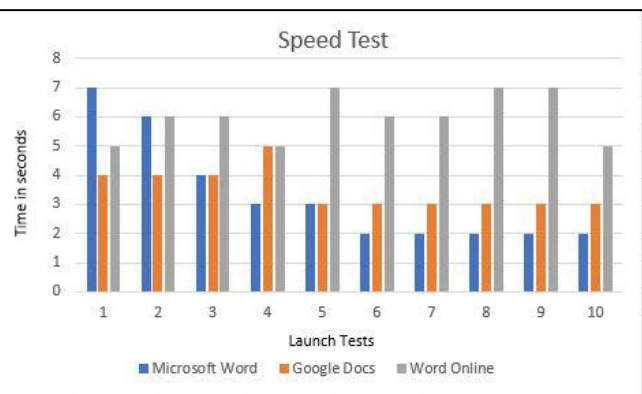


Fig. 5: Bar Chart of Launch Speed Test

A third-party researcher conducted a study as follows:

A group of 35 students (21 women, 14 men in the age range of 18-22 years) enrolled in an Introductory to Psychology in 2010 at the University of Georgia and were required to use Google Docs for completion of two group assignments. Upon completion of the assignments the students were informed of the purpose of the study and given the opportunity to consent to their data being used for this research project. [4]

Over the six-week period of lectures and two group assignments, a survey was taken where various questionnaires were taken to understand the user experience of the students.

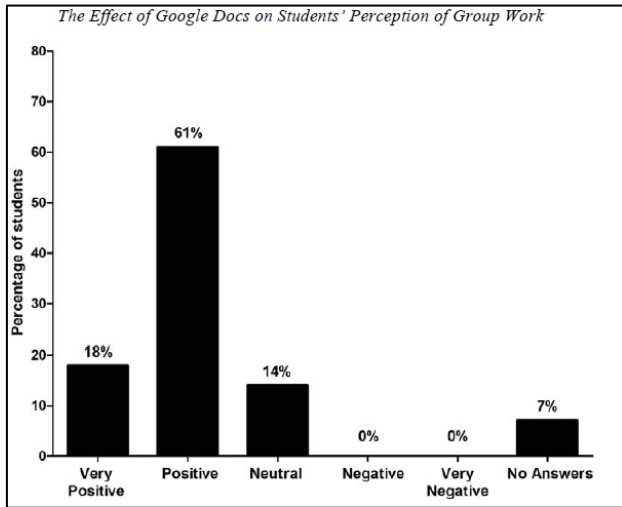
The graph below shows the response of the students in accordance with the question, "Describe Your Experience Using Google Docs for this Group Collaboration." [4]

With optional answers being;

- Made collaboration easier
- Simple to use
- Allowed sharing and editing

- Not as good as face to face communication
- Difficult to use compared to Microsoft Office's Word
- Neutral

- [6] Compare Microsoft Word vs. Google Docs, <https://comparisons.financesonline.com/microsoft-word-vs-google-docs>
- [7] Microsoft Word Uses and Features, <http://www.klientsoltech.com/microsoft-word-uses-and-features/>



IV. CONCLUSION

In this paper, we have studied both the general and technical features of Microsoft Word and Google Docs and their influence on the performance. This study has broadened our knowledge base on both subject matters and yet is still not an easy decision on which to recommend without considering the user and the purpose.

Microsoft has been the number one leading brand and product when it comes to word processing but Google's Google Docs launch with its easy-to-go features and adaptive tools rival the Microsoft product due to its futuristic approach to word processing. Taking into account Microsoft's Office 365, Google still trumps the word processing application because of its early entrance into the cloud and software as a service market.

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REFERENCES

- [1] Brian Hayes, "Cloud Computing"
- [2] Stijn Dekeyser and Richard Watson, "Extending Google Docs to Collaborate on Research Papers"
- [3] Andreas Keller and Stefan Hüsig, "Ex ante identification of disruptive innovations in the software industry applied to web applications: The case of Microsoft's vs. Google's office applications"
- [4] Wenyi Zhou of Indiana University, Elizabeth Simpson of National Institute of Child Health and Human Development and Denise Pinette Domizi of University of Georgia, "Google Docs in an Out-of-Class Collaborative Writing Activity"
- [5] Robert Godwin-Jones of Virginia Commonwealth University, "Emerging Technologies, Web-writing 2.0: Enabling Documenting and Assessing Writing Online"