

Effectiveness of Alerts on Smart and Wearable Devices

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Agenda

- Motivation and Background
- Evaluation of Effectiveness of Alerts on Smart and Wearable Devices
- Results
- Conclusion

Introduction

- Smart and Wearable devices are an essential part of everyday household.
- Allows users to stay connected and receive updates throughout the day.
- With the increase in the number of smart devices over the years the notifications generated by them are also increasing.

Background

- In previous works authors [1,2] have stated that notifications on devices depend on applications.
- Smartphones are considered most popular device to stay updated on appointments, email and software updates.
- Notifications are perceived differently according to situation and the device it is received in.
- Moreover, it is found that too many notifications on different devices can also be disturbing [3,4].

Motivation

- Users receive notifications on multiple smart devices throughout the day. Do we really need so many notifications?
- What is the people's perspective on it?
- What can be done to make the notifications more effective?

Evaluation

- A Pilot Survey was conducted using Google Forms in February 2019
- Forms were distributed via email and personal messaging
- Divided into three sections:
 - Demographics of users
 - Familiarity with devices
 - Importance of notifications on smart devices
- Users were asked to rate the familiarity of device and importance of notifications of different apps on a scale of 1 to 5 where 1 corresponds to Least Familiar/Least Important and 5 corresponds to Most Familiar/Most Important

Familiarity with Devices

Rate on a scale of 1 to 5

Smartphones and Tablets *

	1	2	3	4	5	
Never Used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Daily Used

Smartwatches *

	1	2	3	4	5	
Never Used	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Daily Used

Smartphone and Tablet Notifications

Rate on a scale of 1 to 5 for every category

Importance of Notifications

Audio and Text Messenger *

	1	2	3	4	5	
Least Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Important

Email *

	1	2	3	4	5	
Least Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Important

Social Media *

	1	2	3	4	5	
Least Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Important

Calendar *

	1	2	3	4	5	
Least Important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Important

Demographics

- Form shared with users in USA and India
- A total of 120 responses were recorded. Removing the duplicates it was 115
- Gender Distribution : 72 Male and 43 Female
- Average age : 23 Years

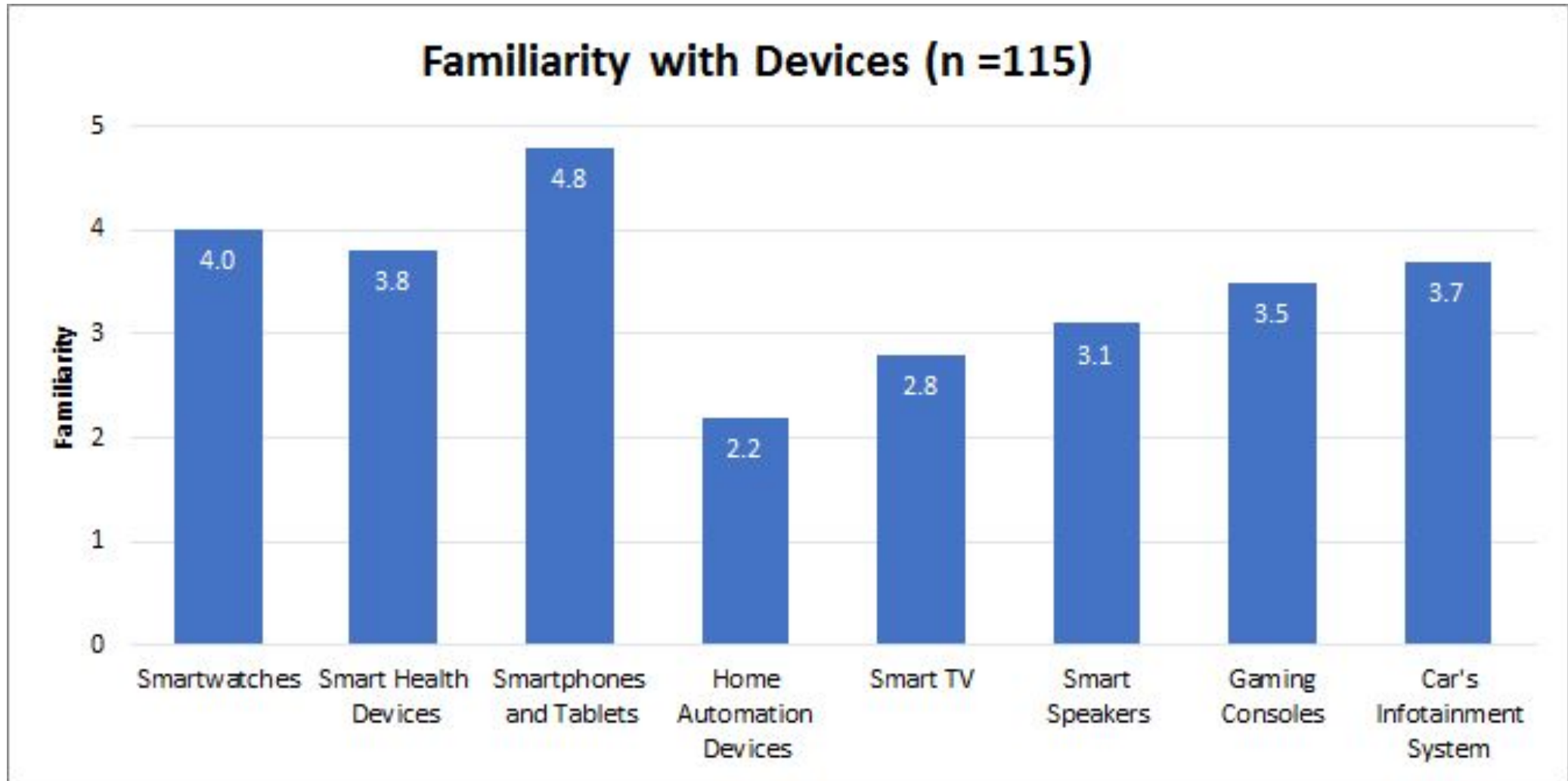
Devices

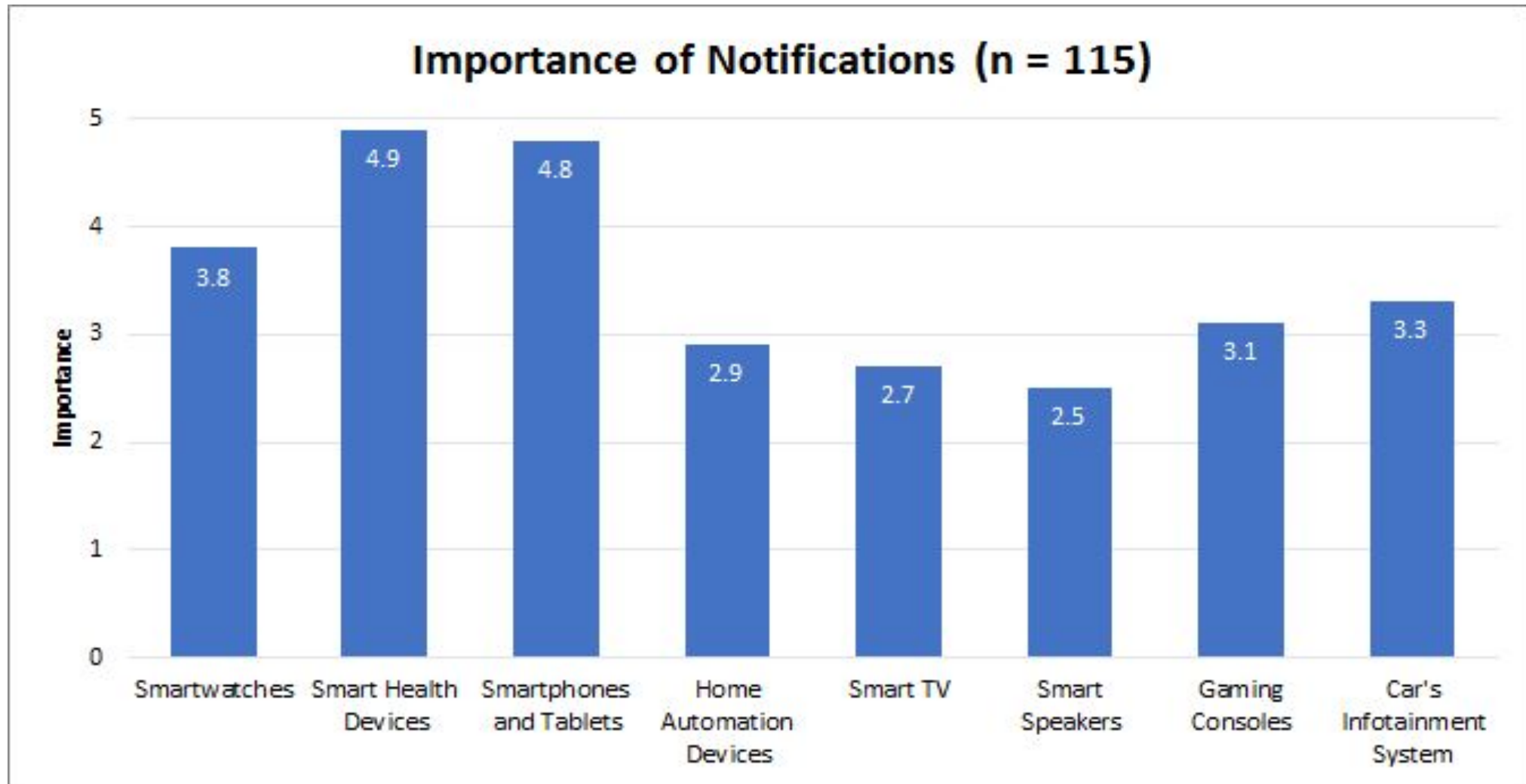
- Smartwatches
- Smart Health Devices
- Smartphones and Tablets
- Smart TVs
- Home Automation Systems
- Smart Speakers
- Gaming Console
- Car Infotainment System

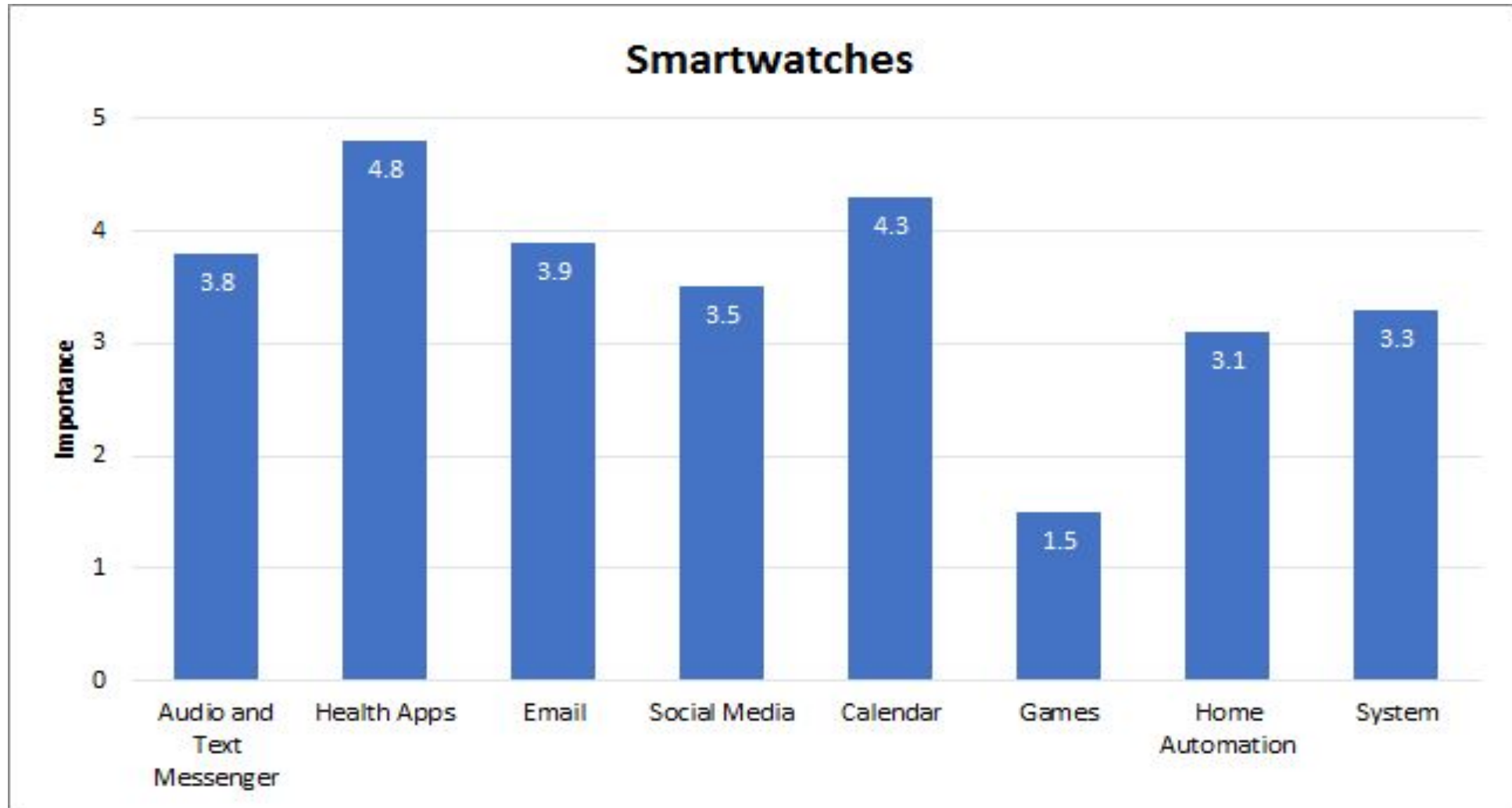
Apps

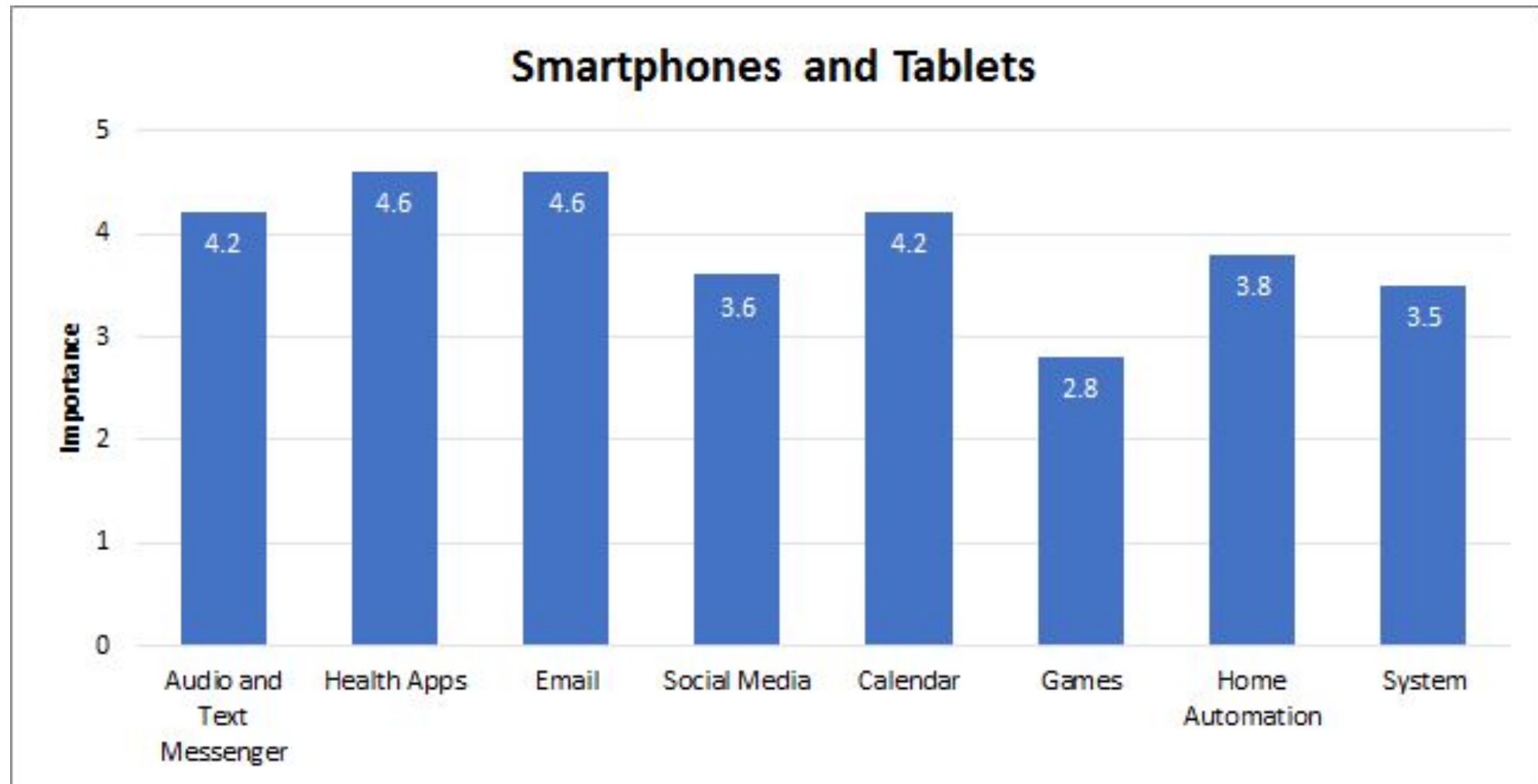
- Audio and Text Messenger
- Health Apps
- Email
- Social Media
- Calendar
- Games
- Home Automation
- System

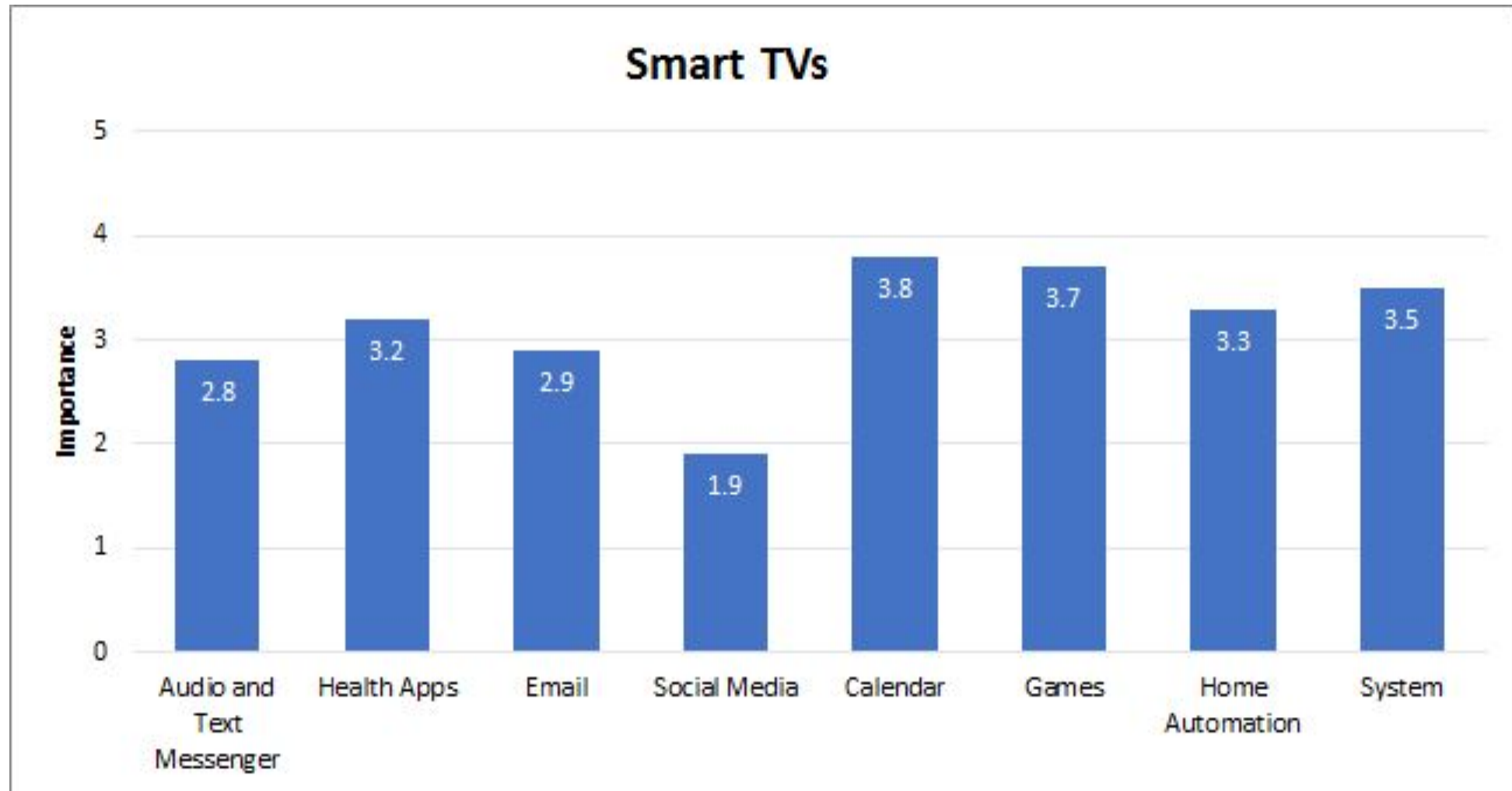
Results

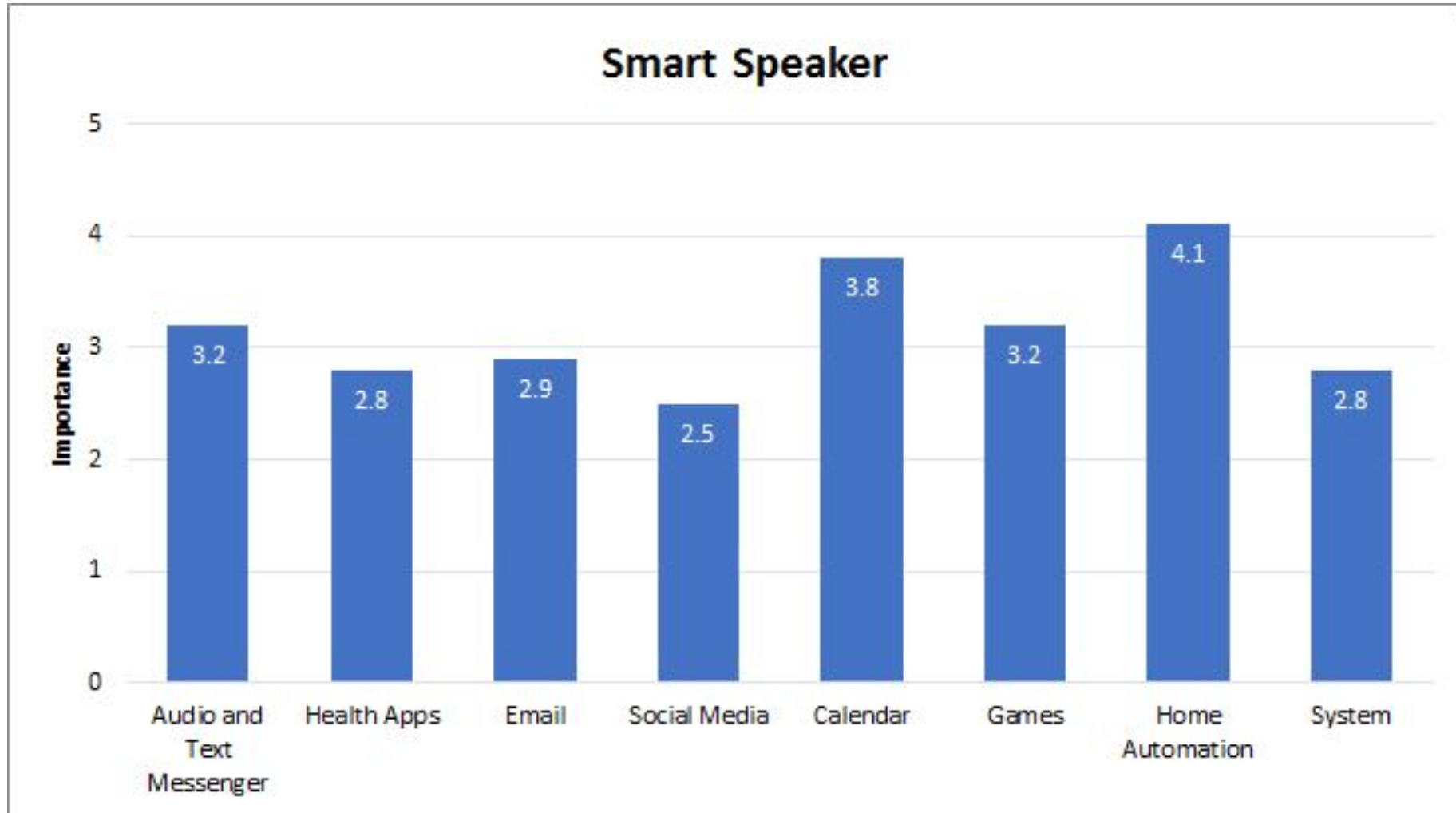


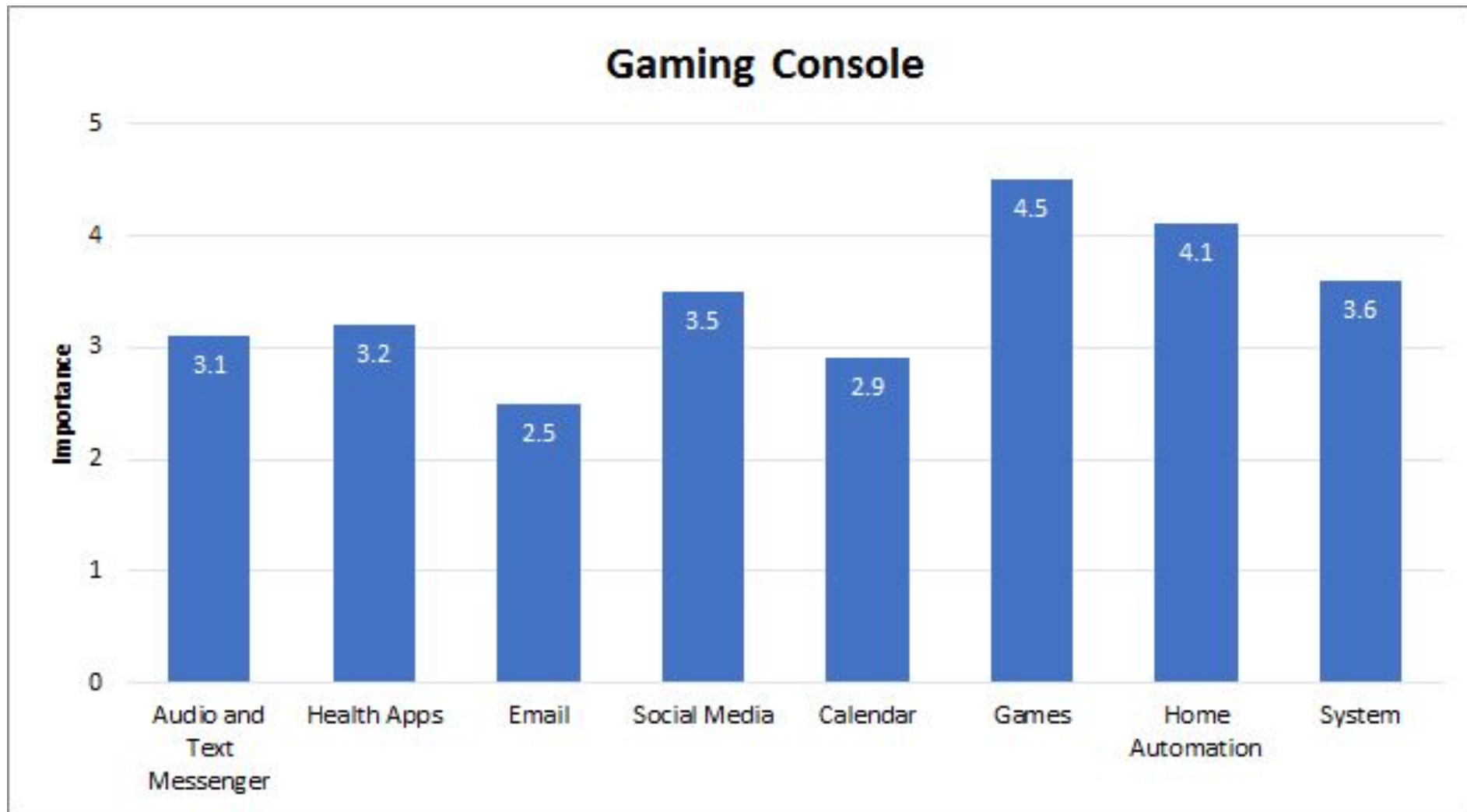


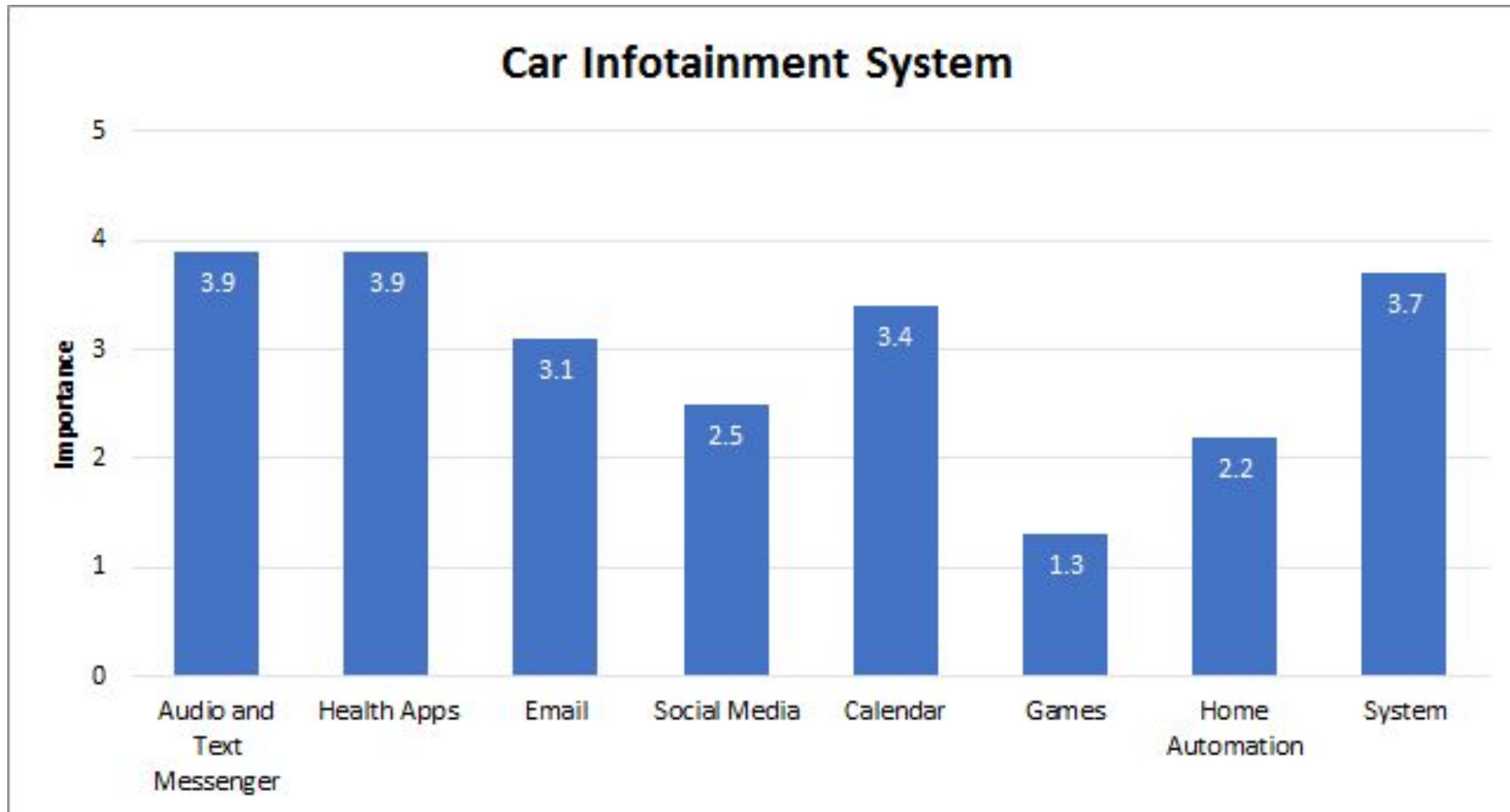


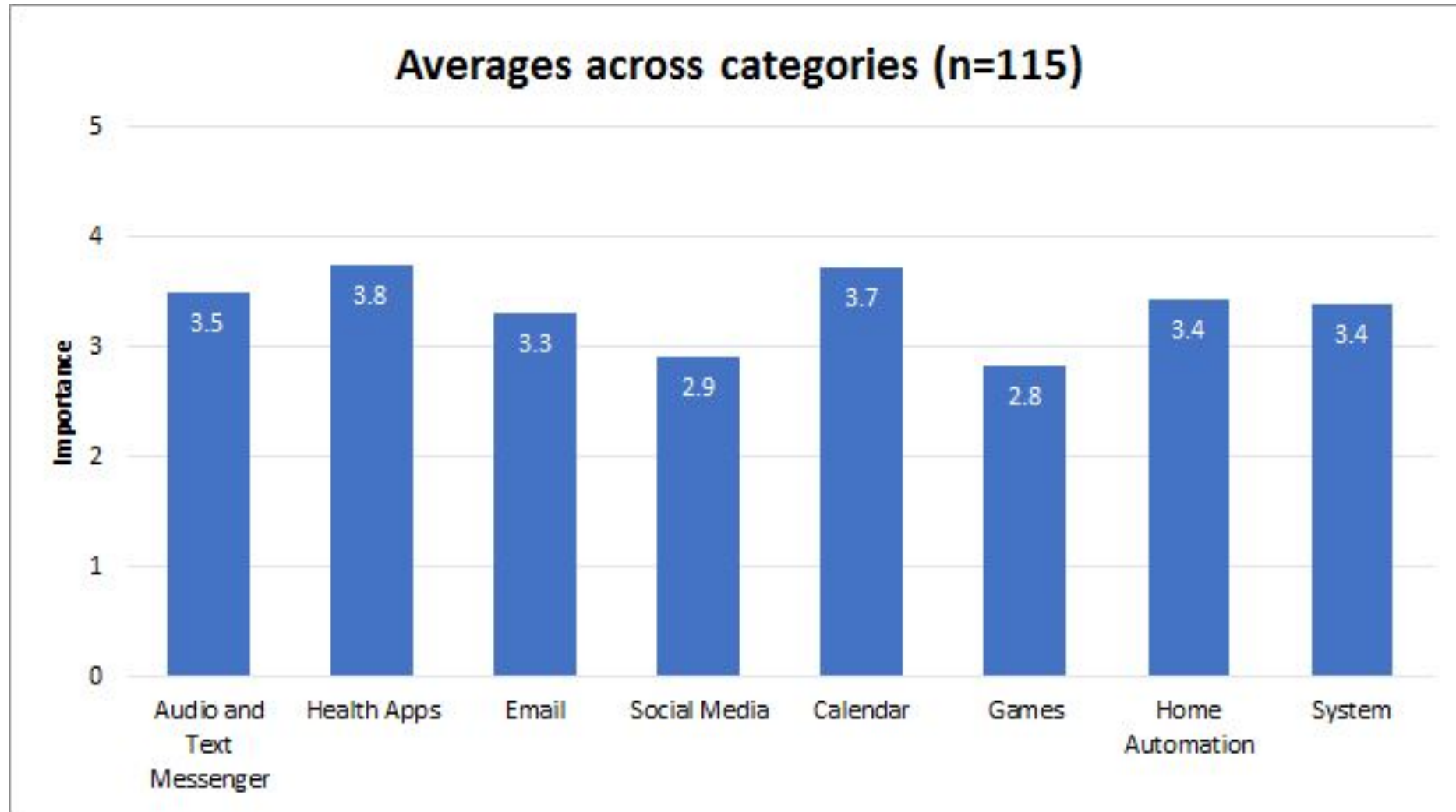












Conclusion

- Device Manufacturers can consider results from a full fledged study to create a personalized notification delivery system.
- It can be seen that interplay of both apps and devices determine the importance of notifications
- People prefer to receive notifications from Calendars and Health apps irrespective of device

- Give least preference to notifications from Games and Social Media
- In devices, Smartphones and Smart Health Devices are considered most important
- Notifications from Smart TVs and Smart Speakers are least preferred.

Improving Notifications

- A device opt out approach can be implemented across all the devices and the notifications have to be designed individually instead of routing through all the devices.
- In messaging apps the notifications can be grouped according to contact type and alert sounds can be devised for different types of notifications.

References

- [1] S. Moran, J. E. Fischer, Designing notifications for ubiquitous monitoring systems, in: 2013 IEEE International Conference on Pervasive Computing and Communications Workshops (PERCOM Workshops), IEEE, pp.115–120.
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- [3] K. Church, R. De Oliveira, What's up with whatsapp?: comparing mobile instant messaging behaviors with traditional sms, in: Proceedings of the 15th international conference on Human-computer interaction with mobile devices and services, ACM, pp. 352–361.
- [4] A. P. Felt, S. Egelman, D. Wagner, I've got 99 problems, but vibration ain't one: a survey of smartphone users' concerns, in: Proceedings of the second ACM workshop on Security and privacy in smartphones and mobile devices, ACM, pp. 33–44.