SUBMITTED ON 26 NOVEMBER 2021

BY MICHAEL WICIAK
UNIVERSITY OF LEEDS
WORD COUNT:1039

USAGE OF DIGITAL HUMANS FOR IMPROVEMENT OF CUSTOMER EXPERIENCE IN INTERNET-BASED BANKING SERVICES

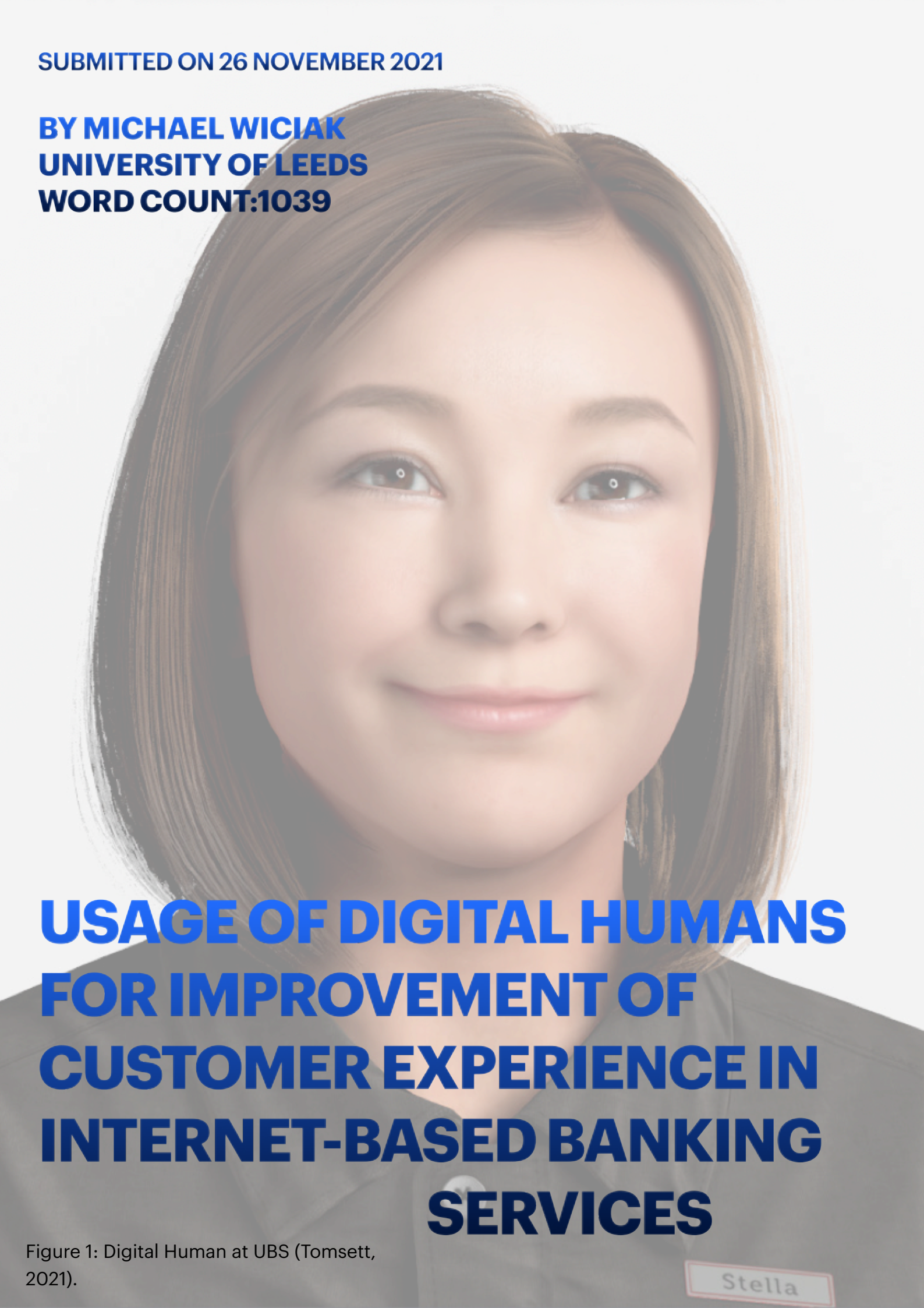

Figure 1: Digital Human at UBS (Tomsett, 2021).

1 SUMMARY

The ‘Age of Digitalisation’ and the recent Covid-19 pandemic has accelerated a change in consumers’ purchasing patters, shifting it from traditional retailing to online retailing, due to improvements in globalisation and widespread availability of smart digital devices. These technologies have facilitated encounters without face-to-face employee-customer contact. In some service, even digital interactions with employees and customers does not exist. Lack of human interaction undermines the customer journey, especially in industries where a close relationship with another human can severely impact the customer experience and customer loyalty, much like in financial services.

This technical report presents a potential solution to this problem, through the introduction of Digital Humans. The report will summarise the Digital Humans (DH) technology and question its practicality in improving user experience in online financial services companies. Projections suggest that DH seems promising in being able to solve this problem but requires further research and innovation to make it viable to the masses, but It will become far more prevalent in the future.

2 TABLE OF CONTENTS

3 INTRODUCTION

The aim of this report is to clearly explain Digital Humans Technology and its usage in the online financial services with the purpose of improving user experience, basing the analysis and conclusion on relevant literature. This report will summarise the major legal, social, ethical and professional issues and create projections for the short (1-2 years), medium (5 years) and long term (10 years +).

Digital Human (DH) is an AI-powered avatar, lifelike persona that can see, hear and understand its users. DH is a technology which combines natural language processing (NLP) AI-based chatbot, speech recognition and a realistic 3D human face model. As it's able to communicate with its users using spoken language, tonality and manipulations in facial body language, it attempts to recreate realistic human interactions (Caballar, 2021).

Internet banks provide most of the services that traditional banks provide without having a local branch. Most traditional banks offer online banking in addition to having a local branch (Beers and Howard, 2021). Since the customer experience in internet banking is void of personal relationships and the service is generalised to fit every customer rather than to provide a personalised service (Frankenfield and Anderson, 2020), many customers prefer to use traditional banking (Johnson, 2017) (Zorfas, 2016).

This area is of interest as DH can not only be used to replicate and improve on human intelligence but also accurately copy behavioural, personality and emotional patterns a human would have, making AI to human interaction closer to being indistinguishable from human to human interactions (Tomsett, 2021). The author's methodology for this technical report consists of a combination of iterative literature searches from peer-reviewed sources, documentation from companies that currently develop/sell DH services as well as news articles from reliable sources, reporting on DH.

4 REPORT BODY

4.1 FUNCTIONALITY

DH operates using four stages. Chatbot stage allows the customer to have a conversation with a DH model. This layer can be trained using Google Cloud Dialogflow (Google Cloud, 2021) using the model in Figure 2.

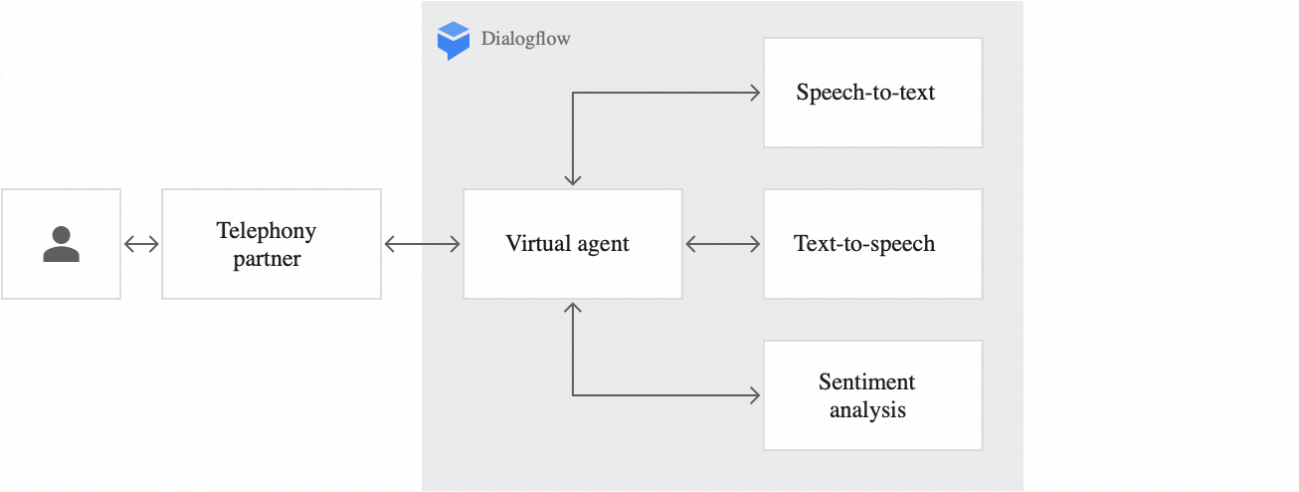

Figure 2: Voicebots for customer service (Google Cloud, 2021).

In the Hosting stage, output of the chatbot is converted into speech, using a Voicebot. To be able to process the customer's spoken question, it is converted into text. Visual stage creates the DH 3D model. Using NLP, semantics, facial expressions and simulated emotions are added at the appropriate moment in the output (Ward et al., 2021). These layers are integrated (Integration stage) and a user interface is created to ease the usage of DH for customers, ensuring accuracy of complex conversation is met with dynamic answers.

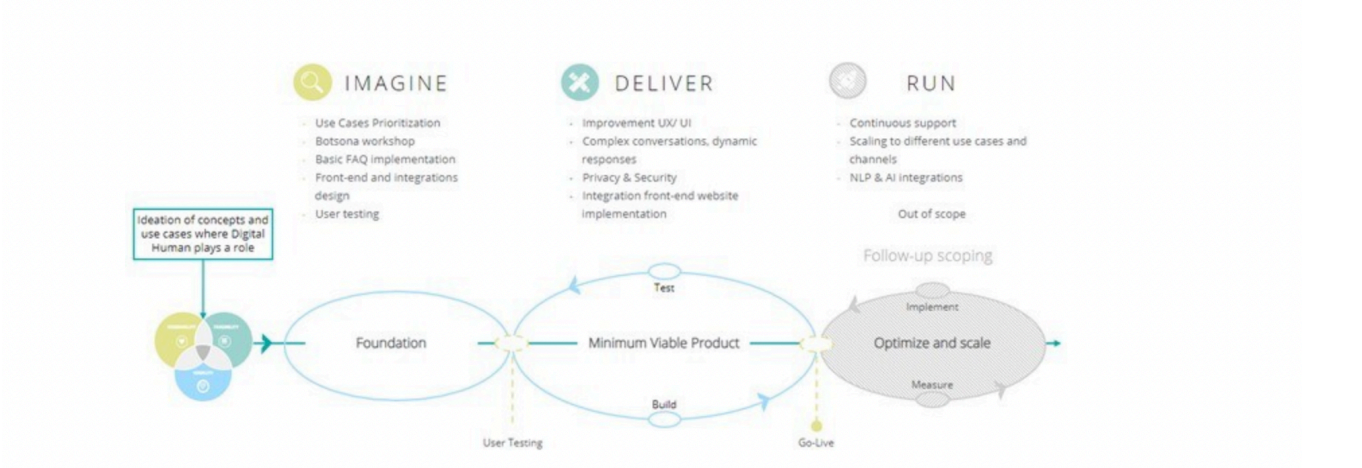

Figure 3: DH development plan (Ward et al, 2021)

4.2 APPLICABILITY

Some internet banks utilise chatbots as replacements for human employees, which often don't work to customer satisfaction (Zorfas, 2016). Customers are less willing to interact with chatbot's requests/advice and are less likely to use that service (Wessel et al., 2020). DH can be used in these scenarios as improvement of both standalone chatbots and a replacement for customer-managing employees while not compromising on customer experience (UneeQ, 2021) as they attempt to accurately replicate natural customer-employee interactions. The major benefit of DH is that each model is scalable and replicable, and available 24/7, whereas employees aren't, emphasising DH's cost saving capability (Ward et al., 2021).

Figure 4: DH at UBS in action (Human, 2018)

4.3 CONCERNS

Traditional banks might switch their business models, adopting DH and reducing or eliminating local branches. The employees of those branches might become unemployed. Bias and discrimination might be introduced to the technology as the software might be trained and evaluated on a skewed training set, resulting in minorities with unique accents and dialects not be able to use DH with ease.

The conversation customers had with the software might be recorded and saved. That data might be sold to third-party firms or used by the staff improving the software. Private conversation would become public, rising privacy concerns. There is clear need for regulation covering DH before becoming widespread.

4.4 PREDICTIONS

DH is already in use by a traditional investment bank, UBS, with uses in financial forecasts (see Figure 4) and simple banking processes like ordering a new card, and UBANK, an internet-based lending bank (UneeQ, 2021). However, currently DH are made bespoke and need a long term development plan in order to fit client's needs. The process in Figure 3 can take many months of development (Ward et al., 2021). Considering the limited amount of companies currently making DH solutions, it seems unlikely the DH technology will become more prevalent in the short term.

According to Servion (Nirale, 2021), "AI will power 95% of customer interactions by 2025" in the financial sector, which includes the utilisation of technologies such as augmented reality, AI-based chatbots and holograms, increasing their demand, focusing on efficiency of widespread development. All of these technologies can be used or are integral parts of DH, drastically reduce the time it takes to develop DH. In the medium term, the usage of DH by internet and traditional banks might start to accelerate.

The problem of 'untact' services might become more prevalent in the western world, where predominant amount of services are supplied digitally, without face-to-face employees-customer contact, much like in South Korea today (Lee and Lee, 2019), putting more pressure on improving the customer journey in digital services in order to retain customers who value human interactions (Johnson, 2017) (Zorfas, 2016), of which DH is a potential solution. However, for this sort of effect to manifest in the majority of the internet banking firms, might extend into the long term.

5 CONCLUSION

There seems to be great potential in the usage of DH in order to improve customer experience when using services from Internet bank and Digital banking. Since there is a need for such technology (Zorfas, 2016), DH could fill that gap. However, the development is still premature and requires further innovation and research. As showcased by Gartner Hype Cycle 2021 for emerging technologies (Gartner, 2021), where DH is expected to reach the plateau of development in more than 10 years time, showing this is more of a technology of the future, not for the short term.

6 REFERENCES

Caballar, R. 2021. Are Digital Humans the Next Step in Human-Computer Interaction? IEE Spectrum. [Online]. 06 April 2021. [Accessed 25 November 2021]. Available from: https://spectrum.ieee.org/are-digital-humans-the-next-step-in-humancomputer-interaction

Tomsett, D. 2021. What are Digital Humans? A giant leap in brand & customer experience. [Online]. UneeQ. [Accessed 25 November 2021]. Available from: https://cdn2.hubspot.net/hubfs/4954505/What%20are%20digital%20humans%20UneeQ%20eBook%20v2.pdf?hsCtaTracking=211ba3d9-e4af-4974-97b5-b6e1ef0b4c8d%7Ce0aa2d95-5653-4522-b19a-2313ffdcd0ba

Beers, B. and Howard, E. 2021 How Online-Only Banks Stack up Against Traditional Institutions. Investopedia. [Online]. 14 June 2021. [Accessed 25 November 2021]. Available from: https://www.investopedia.com/articles/pf/11/benefits-and-drawbacks-of-internet-banks.asp

Frankenfield, J. and Anderson, S. 2020. Online Banking. Investopedia. [Online]. 04 May 2020. [Accessed 25 November 2021]. Available from: https://www.investopedia.com/terms/o/onlinebanking.asp

Johnson, G. 2017. Your Customers Still Want to Talk to a Human Being. Harvard Business Review. [Online]. 26 July 2017. [Accessed 25 November 2021]. Available from: https://hbr.org/2017/07/your-customers-still-want-to-talk-to-a-human-being

Google Cloud. 2021. Dialogflow. Google Cloud: Dialogflow. [Online]. [Accessed 25 November 2021]. Available from: https://cloud.google.com/dialogflow#section-7

Ward, S., Boom, M., and Majenburn, M. 2021. Elevating the Digital Human experience. Deloitte. [Online]. [Accessed 25 November 2021]. Available from: https://www2.deloitte.com/nl/nl/pages/customer-and-marketing/articles/digital-human.html

Wessel, M. 2020. AI-based chatbots in customer service and their effects on user compliance. [Online]. 17 March 2020. [Accessed 25 November 2021]. Available from: https://link.springer.com/article/10.1007/s12525-020-00414-7

UneeQ Digital Humans. When digital humans meet financial services, there's proof that you can be in two places at once. UneeQ. [Online]. [Accessed 25 November 2021]. Available from: https://digitalhumans.com/casestudies/ubs/

Nirale, S. 2021. AI will power 95% of customer interactions by 2025. Finance Digest. [Online]. Available from: https://www.financedigest.com/ai-will-power-95-of-customer-interactions-by-2025.html

Lee, S. and Lee, D. 2019. "Untact": a new customer service strategy in the digital age. [Online]. 5 August 2019. [Accessed 25 November 2021]. Available from: https://link.springer.com/content/pdf/10.1007/s11628-019-00408-2.pdf

Gartner. 2021. Hype Cycle for Emerging Technologies, 2021. Gartner. [Online]. [Accessed 25 November 2021]. Available from: https://images-cdn.welcomesoftware.com/Zz01ZmY4NGU1ZTAwZjgxMWVjYWI3MjY1MjhkNjNjMWEzNw==

Zorfas, A. and Leemon, D. An Emotional Connection Matters More than Customer Satisfaction. Harvard Business Review. [Online]. 29 August 2016. [Accessed 25 November 2021]. Available from: https://hbr.org/2016/08/an-emotional-connection-matters-more-than-customer-satisfaction