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RESEARCH ARTICLE:

Acceptance of Professional Service Robots: A Cross-Cultural Study

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Abstract

Service robots are humanoid and non-humanoid machines that communicate and deliver services to customers of an organisation. They are Artificial intelligence (AI) enabled and display human intelligence (Wirtz et al., 2018; Blut et al., 2021). Service robots may undertake cognitive-analytical activities and emotional-social duties. Artificial Intelligence is built-in to service robots, allowing them to interact with the customer as regular hospitality services thrive on providing interpersonal interactions to create customer value. As substitutes for human employees, service robots may posit a psychological and emotional challenge to the traditional view of hospitality services, such as human frontline employees. Professional Service Robots (PRS) have proven to have the potential to drastically change the service industry. The use of PSR is lagging in an African context, necessitating more research on factors that may influence acceptance. This study aims to explore the cultural factors that influence consumers' acceptance of PSR. The Service Robot Acceptance Model (sRAM) is adopted as a guiding framework for this study. Using an exploratory qualitative research approach data is collected using three focus groups, with 16 participants in total, using the simulation method. Interviews were also conducted with seven participants who were purposively selected based on age, gender, and race. Sexual orientation was found to have a positive influence on acceptance while beliefs and norms were barriers to acceptance, with the Ubuntu philosophy being one of the main reasons for rejection. Language appeared to have a huge role, as forwarded by the sRAM. The results suggest that acceptance of PSR is also dependent on cultural factors, however, its influence is lesser in certain types of service sectors. The research recommends that practitioners, service robot developers, and implementers should consider the culture of the consumers when implementing service robots.

Keywords: *artificial Intelligence; culture; professional service robots; robotics; service industry*

Introduction

The field of technology has been witnessing constant developments that have contributed to societal wellness, hence becoming a vital part of both businesses and communities. This development has led to the introduction of new technologies enabling marketers to deliver effective services. Resistance, however, may accompany the adoption of technology from both communities. One of the technology-driven machines that is altering societies and business communities is service robots that are integrated with Artificial Intelligence (AI). Artificial Intelligence has radically altered humans and society with the contrary marketing, experimenting, and deploying AI in mainstream operations to accelerate success (Adams, 2021; Chintalapati and Pandey, 2022). For example, research shows that AI service robots are becoming an integral component and, mostly in the future, integrated into service industries. This is because AI tools have a high potential of being used for prognosis, diagnosis, planning, and providing excellent service in the aforementioned industries (Esmaeilzadeh, 2020). Nevertheless, AI technologies have been used mostly in the manufacturing and production industries and are growing slowly in services industries, particularly in the South African market. Moreover, to our knowledge there is limited research on the acceptance of AI-empowered PSR in the South African service industries. The limitation is compounded by scepticism among consumers' and professionals' fear of AI replacing humans, a lack of financial and human resources and infrastructure, and other factors like social-cultural influences. Boshoff *et al*. (2022) position that

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African research is underrepresented and there is general oversight; they encourage more research. This study, therefore, aims to explore the cultural factors that influence consumers' acceptance of Professional Service Robots within a South African context. This is achieved by answering the following research question: What are the cultural factors that influence the acceptance of Professional Service Robots in the South African context?

This question is addressed through in-depth interviews and focus groups with purposively selected South African consumers from the health and tourism industry. In this paper, the research will present literature on the acceptance of professional services, the methodology used, the presentation of data, future research, and lastly, the conclusion. This research delves into the use of PSR, which encompasses both humanoid and non-humanoid machines capable of communicating and delivering services to customers. Service robots can be classified as personal service robots or PSR, with the former being used for non-commercial purposes and the latter for commercial purposes like robot travel agents (Schepers and Streukens, 2022). They emerged as a result of the convergence of AI, robotics, automation, and sensors to provide human-robot interaction (HRI) experiences into service delivery environments (Kang and Choi, 2008). The emergence of service robots has generated several headlines, including the service robots that assist with China's railway services and banks, the Budapest Café robots that serve coffee, and the overarching question of whether the robots are displacing human workers (Lu *et al.,* 2020). They are popular in Western and Asian cultures, however, to the researchers' knowledge there are few within the African context, thus, necessitating this research.

Service robots can do complex tasks and make autonomous decisions based on data. In a service setting, they interact with customers, thereby, creating a social presence. These robots leverage AI capabilities and software to display human intelligence, allowing them to interact with customers similar to traditional hospitality services that thrive on interpersonal interactions to create customer value (Wirtz *et al.,* 2018; Blut *et al.,* 2021; Zhong *et al*., 2022). Artificial Intelligence SR technologies are replacing human services and this is evident by the forecast of Chabot and related technologies will exceeding $1.34 billion in value by 2024 (Crolic *et al.,* 2022). Artificial Intelligence SR technologies give consumers numerous benefits, wearable technology for health monitoring, recommended systems for guidance, smart home items for safety, and voice-activated virtual assistants for improved quality of life. Research has repeatedly highlighted the complexity of the social practices related to robot acceptance in light of the growing prevalence of social robots (Korn *et al*., 2021). As substitutes for human employees, PSRs challenge the traditional view of hospitality services, particularly in frontline roles. However, their adoption in an African context lags, necessitating further research on the factors that influence acceptance (Zhong *et al.,* 2022). In sectors of the service industry that produce intangible service benefits, such as the banking and the tourism sectors, the use of service robots is a feasible way of ensuring service quality, efficiency, and enhancing guest experiences (Choi *et al.,* 2021). Hospitality services thrive on providing interpersonal interactions to create customer value. As substitutes for human employees, service robots may pose a psychological and emotional challenge to the traditional view of contact and non-contact services (Lu *et al*., 2019).

Globally, the service industry landscape is vast and complex, with closely intertwined activities. It is composed of healthcare services, financial services, information technology (IT) services, professional services, transportation and logistics services, hospitality, and tourism services, retail and e-commerce services, and education and training services (Moriset, 2018). However, they are classified according to professional service, mass service, service shop, and service factory; others have customisation and service differentiations. This industry is prone to technological advancement, a competitive market, and a high demand for customised services, and marketers are changing the old system. The aforementioned classification enhances the adoption of technology like artificial intelligence, thus, researchers and practitioners are in constant need to increase customer satisfaction (Masitenyane and Mokoena, 2023). Thus, there is a need to establish how AI professional services robots are being received by consumers and whether they can or cannot be integrated with human intelligence. This concern is high in an African context where unemployment is high and insufficient resources. Despite the concerns, PSR has proven to have the potential to drastically change the service industry, globally. The use of PSR is lagging in an African context, necessitating more research on factors that may influence acceptance (Jembere and Moodley, 2021). While there is research in the service industry, there is limited research in the African context. Boshoff *et al*. (2022) encourage researchers to explore service research from an African perspective and to consider the unique contextual issues and current events that inspire service research in Africa.

Since most robotics studies deal with engineering theory (robot design, navigation, face/object/speech recognition, autonomy), this research focuses on the service industry. Theoretical frameworks have so far been applied to

diverse service fields like airlines, restaurants, retail, hospitality, and banking at a global level. Unfortunately, there remains a need for more African-centered frameworks and applications (Boshoff *et al.,* 2022). In South Africa, hotels like Sandton Hotel in Johannesburg, and banks like Nedbank deployed service robots to assist human staff by performing simple and repetitive tasks, such as the delivery of food, amenities, and customer queries (Ziemke and Thill, 2014). These pre-programmed service robots are regarded as subordinate equipment to enhance customers' experiences by fulfilling novelty and hedonic values.

Consumer culture influences behaviour, purchasing, and how one receives a service or consumes a service. This is because culture encompasses traditions, financial and emotional values, beliefs, attitudes, and behaviours and dictates how one must or must not live.

Table 1: Summary of cultural factors

Cultural Factors and Their Influence on the Acceptance of Service Robots	Ubuntu Philosophy
	Language
	Religion and Customs
	Gender Influences
	Individualism and Collectivism

Table 1 provides a summary of the cultural factors that may influence the acceptance of service robots. Respondents from collectivistic cultures place a higher value on artificial social cues than people from individualistic cultures. African cultures are mostly collective and uphold the *Ubuntu* philosophy. Among consumers from more collectivistic cultures, the subjective norm is anticipated to have a bigger impact on purchase intention (Huang and Rust, 2018). South African culture is mostly collective, and it will be interesting to know if it will influence consumers' expectations and perceptions. While most South Africans profess to be collectivist, the authors detect a lot more individualistic tendencies among South Africans who prioritise themselves (Ramushu, 2014).

Language, though intertwined with culture, in its different forms plays a huge role in communication *(Oparinde et al*., 2017). The language style is a potent verbal indication that shapes people's impressions of robots and this has posed more challenges to SR acceptance. For example, most SRs were developed in Western or Asian cultures, affecting the language of the service robot, especially humanoids. Most languages in Africa, like isiZulu and Xhosa, are labelled lower resource languages and they are underrepresented, thus, there may be challenges and language barriers in natural language processing and language development in AI-based service robots (Maseko and Mgutshini, n.d; Pretorius and Bosch, 2003; Daniel, 2020). This may suggest that AI technologies may struggle to code or interpret some native language terms. This raises the potential for resistance from African consumers who may feel underrepresented. The researchers argue that customers whose languages are not represented or displayed in SR may resist SR and regard one's culture as inferior (Maseko an Mgutshini, n.d).

People engage with or avoid interacting with robots in particular situations, especially those influenced by religion and customs (Korn *et al*., 2021). For example, the Japanese tend to regard robots as companions, despite not being living creatures. Western cultural history originates in Greek philosophy, as represented by Judeo-Christian monotheism, which maintains the linear worldview that connects the beginning and the end (Bartneck *et al*., 2006; Coeckelbergh, 2022). In this view, God is omnipotent and only God can infuse inanimate objects with life (Bartneck *et al.,* 2006; Coeckelbergh, 2022). Therefore, attempting to create a life by inventing autonomous robots can be interpreted as a sacrilegious invasion of God's realm. In light of these views, Westerners thus tend to perceive robots as machines that are equipped with advanced technologies rather than as living creatures and companions. Gender plays a significant role in the acceptance of technology, as forwarded by Chinyamurindi and Shava (2015) and Korn *et al.* (2021). The same principle applies to service robots, as Zhong *et al.* (2022) observed women being less receptive to them. Findings by Ayyildiz *et al*., (2022) conversely posit that women are more receptive to service robots for service delivery than men. In addition, the gender of the robot plays a role in consumer acceptance of service robots, with female robots being preferred to male robots (Blut *et al.,* 2021; Pitardi *et al.,* 2023). Thus, there lies a need to establish if gender plays a role in a South African context.

Customer needs are diverse and are influenced by their cultural background. Customers feel more comfortable when interacting with robots that behave in a culturally normative way (Bröhl *et al.,* 2019). This cultural background has been associated with robot credibility, likeability, and trustworthiness. The perceived attributes of the service robots vary between cultures (Latikka *et al*., 2019). Meanwhile, there are no studies that have been conducted that attribute acceptance of service robots to cultural differences. Despite the role that culture plays in consumer

acceptance of social robots, AI technologies have been designed and programmed with much emphasis on functionality, efficiency, and consistency without considering cultural adaptions like greetings, emotional behaviour, and physical contact (Korn *et al*., 2021). The three dimensions of the sRAM do not consider the cultural aspect of service customers. This research will thus include the cultural aspect in the model. Research shows that culture has a huge effect on the development pace of robotics, customer expectation, customer perception, and the acceptance of service robots in society (Korn *et al*., 2021; Bröhl *et al.,* 2019). Besides preferences for SR varies not just between countries but even within nations with comparable cultural origins (Korn *et al*., 2021). Face-to-face interaction between a consumer and service provider alongside culture influence customer satisfaction based on the role theory (Ramushu, 2014). Artificial Intelligence technology must be able to distinguish consumers' cultural cues when communicating and respond accordingly (Korn *et al*., 2021). Individuals' unique cultural values, beliefs, and practices influence what they anticipate from robots. In countries such as Brazil, Russia, India, and China that are heavily influenced by culture, the adoption of service robots varies. For example, in China, the scale of those willing to accept service robots and the users' overall experiences was positive (Chang *et al.,* 2022). This was due to factors such as cultural openness to technology, labour market dynamics, and the government's support for innovation. This varies from country to country based on cultural differences.

Customers usually assess their satisfaction based on service quality and price. Their expectations are varied and are often different before use, during use, and the after use of certain services. To estimate customer expectations, it is essential to detect differences in their expectations and perceptions (Čolaković and Bajrić, 2017). While the authors argue that the user has no real experience with the service in the initial purchase and that experience-based cognitive value is mainly a result of what they hear, see, or feel, expectations are informed through beliefs and religion and when one is exposed to AI they develop emotions that will lead to customer satisfaction. To increase acceptance among consumers, scholars suggest the need to develop AI tech, which mimics human-to-human interaction and also looks human (Zhong *et al.,* 2022). Chatbots are being used by industries and are being humanised to increase acceptance. Crolic *et al*.(2022) argue that there is little knowledge of the effect of anthropomorphism on how consumers respond, particularly in the service industry. Thus, this research seeks to see how consumers respond to humanised AI in the service industry. Crolic *et al.* (2022) found that the negative emotional state of the consumers when interacting with anthropomorphic chatbots affects customer satisfaction, overall business appraisal, and eventual purchase intent. Negative emotions lead to low satisfaction, overall business appraisals, and intention to purchase. Humanoid robots were considered superior to zoomorphic robots in task performance, whereas zoomorphic robots were mainly regarded as toys. Japan showed the strongest attachment to humanoid robots as communication partners. Korea and the United States expected humanoid robots to perform more housework and physical tasks. Similarly, another cross-cultural study by Choi *et al.* (2021) found that Japan showed higher emotional and social attachment to robots compared with the Netherlands in the West. They speculated that the Japanese have gradually become accustomed to this technology through their long-term exposure to robots.

The Service Robot Acceptance Model (sRAM)

The Service Robot Acceptance Model (sRAM) is a theoretical framework designed to understand and predict individual acceptance and the adoption of service robots. It posits that factors such as functional, social-emotional, and relational features can influence the acceptance of PSR. The model suggests that usability, usefulness, ease of use, and adherence to social norms are crucial elements to the customer's interaction and acceptance of AI service robots. According to the model, acceptance increases when the consumer perceives the AI service robot to be easy to use, and contractionary acceptance decreases if the consumer perceives it to be difficult. This can be affected by cultural factors and other situational factors, as argued by Chinyamurindi and Shava (2015) and Korn *et al.* (2021). The SRAM model has been criticised because it lacks sufficient empirical data and emphasises theoretical information, which may not be relevant in a real-life scenario (Lu *et al.,* 2020). However, it is also important to investigate cultural factors which influence consumer acceptance.

The Service Robot Acceptance Model (sRAM) helps gain a better understanding of customer interactions with service robots (Fuentes-Moraleda *et al.,* 2020). According to the Service Robot Acceptance Model (sRAM), customer acceptance of service robots depends on functional, social-emotional, and relational elements (Wirtz *et al.,* 2018). The functional elements are based on usefulness, ease of use, and social norm adherence. This aspect is based on TAM, which refers to the functional goals of using new technology. Customer acceptance increases as ease of use and usefulness increase. The social-emotional elements relate consumer acceptance to perceived

humanness, perceived social presence, and perceived social interactivity (Van Doorn *et al.,* 2017). Perceived humanness presumes that robots should reflect humans and exhibit anthropomorphic characteristics. They should be capable of recognising and tracking human expressions and responding accordingly. Social presence and interactivity involve the customers' ability to feel cared for by the robots. Customers' perceptions of a service robot's social skills and performance must be aligned for them to be fully accepted (Fuentes-Moraleda *et al.,* 2020). The relational elements that are important for the acceptance of service robots are trust and rapport (Wirtz *et al.,* 2018). Customers' trust in service robots can improve based on their social skills during a service interaction. When customers perceive that the service robots are lacking in social cues then they will find it difficult to trust the robots. Rapport on the other hand can be characterised by the customers' perceptions of the feeling of being cared for by the robot and a personal connection between the robot and the customer (Fuentes-Moraleda *et al.,* 2020). It is important to consider the customers' needs when using the sRAM model for customer-robot interaction.

Methodology

An exploratory design with a qualitative approach was used in the study because AI technologies are still at an infancy level in South Africa. A qualitative method was adopted to explore this phenomenon from empirical evidence because research on the influence of culture on the acceptance of service robots is still limited. Due to the few service robots in Africa**,** an exploratory research design was warranted for the study since it allows the identification and exploration of new ideas (Camargo *et al*., 2020). Cross-sectional research was used in the study, using electronic interviews and focus group discussions because it helped researchers to have a deeper sociological and psychological understanding of consumers' lived experiences and perceptions (Krueger, 2014).

Consumers of services from the banking and tourism sectors made up the sample, which included a total of 16 participants for the focus group discussion. The sample was selected based on age, gender, and race, which herein are the limitation of the study. Furthermore, the selection was based on participants' familiarity/non-familiarity with the concept of service robots and their lived experiences. To have a fair representation of age cohorts and to analyse the contribution of these to culture, consumers of ages 21 to 60 were used. A focus group discussion was deemed necessary as it allowed respondents to engage and feed off each other's experiences and dynamics, thus, leading to rich data (Tran *et al.,* 2021). Three focus group discussions were conducted to evaluate if culture influenced the acceptance of service robots. Three focus group discussions were used because studies suggest that three to six focus groups are sufficient to identify and understand a range of issues (Guest, Namey, and McKenna, 2017; Bag *et al*., 2022). Each focus group is composed of five to six participants, as Tran *et al.* (2021) recommends such a number is ideal when dealing with complex topics and when the researcher wants deeper individual contribution. An invitation to participants was sent out via email and telephone call discussions took place via Microsoft Teams, with each group discussion lasting approximately 90 minutes.

A virtual research method was used to collect data from respondents because the first data collection round was done during the pandemic and electronic data collection was necessitated in the study (Tran *et al.,* 2021). The Microsoft Teams platform was used since it was conversant, non-threatening, and comfortable to the respondents and was facilitated by the moderator to ensure that topics in the discussion were guided and maintained. Simulation methods and lived experiences were used since most consumers have not yet fully been exposed to service robots and this method can be used to gain consumer perceptions (Jembere and Moodley, 2021). The moderator introduced the study's goals in a brief opening statement and assured participants that their identities would not be revealed or published in any form and that the study's data would be handled anonymously. Participants were exposed to different AI service robots at the time using videos and they were asked questions after each video. The semi-structured schedule using open-ended questions asked during the focus groups was based on the literature that supported this study. The focus groups provided an opportunity for the researchers to explain difficult questions that respondents found difficult to answer. This enabled the researchers to educate respondents and obtain accurate information.

Using a snowballing strategy, a network of contacts was created using the information from the initial interviews. Seven participants were sampled and interviews were conducted for these participants electronically. An open-ended, semi-structured schedule was used to guide the interview process. The semi-structured schedule allowed for probing questions from responses to provide this study with data-rich responses. The interviews gave researchers the chance to go deeper into the subject matter, adding richness to the data that was not possible with other data collection techniques. Each interview lasted roughly an hour on average. Both the focus groups and interviews were all audio recorded to capture the specifics of the talks. Thematic analysis was utilised to analyse

the data and draw conclusions for the investigation. Six steps are involved in thematic analysis: familiarise yourself with the data, create codes, search for themes, examine themes, define and label themes, and provide a report for results (Kend and Nguyen, 2020). To develop conclusions from the trends and themes in the data, patterns from the interview transcriptions are identified using NVivo11 software. NVivo software was developed to analyse qualitative data and facilitate thematic analysis (Rainey *et al.,* 2021). Several themes emerged relating to cultural issues such as humanity, language, individualism and collectivism, sexual orientation, religion, social norms adherence and counterculture, and change, culture, and technology. These topics are covered in more detail in the findings and discussions section.

Findings and Discussion

A total of 16 participants were involved in the three focus group discussions, and in Phase two, one on one interviews with seven participants were conducted. Below are the demographic characteristics of the consumers.

Table 2: Focus Group

Focus Group		
Age	**n**	
<30	9	
31-49	4	
≥50	3	
Gender		
Female	9	
Male	6	
Other	1	
Ethnicity		
Black	12	
Indians	4	
Religion		
Christian	10	
Hindu	2	
Muslim	2	
Traditionalist	1	
Non-Religious	1	
Language		
English	4	
IsiZulu	5	
Swahili	3	
Shona	4	

Table 3: Interviews

Interviews		
Age	**n**	
<30	3	
31-49	1	
≥50	3	
Gender		
Female	3	
Male	3	
Other	1	
Ethnicity		
Black	5	
Indians	2	
Religion		
Christian	3	
Hindu	1	
Muslim	1	
Traditionalist	1	
Non-Religious	1	
Language		
English	2	
IsiZulu	3	
Swahili	1	
Shona	3	

Emerging Themes

The main objective of this exploratory study focused on the cultural factors that influence consumers' acceptance of PSR. The outcomes of the thematic analysis revealed the main theme: which broke into seven themes: humanity, language, individualism and collectivism, religion, change, culture and technology, sexual orientation, and social norms adherence and counterculture.

Table 4: Identification of themes and subthemes

Moral Perspectives	Humanity Ubuntu Philosophy
	Social norms adherence
	Religion
	Counterculture
Communication	Culture and technology
	Language
Identity and Diversity	Sexual orientation
	Individualism and collectivism

Theme 1: Moral Perspectives

Humanity was noted as one of the most important factors which influence the acceptance of AI SR. Ninety percent of the participants stated that they would accept AI SR if it benefited humanity. Participants below 30 years were the main believers in humanity more than the older generation. Two participants defined humanity as "Compassion for others, co-existing with humans." Participants, thus, indicated their acceptance of robots in instances where it is beneficial to humanity. One respondent stated that they will "fully embrace a robot it benefits humanity, and not

only for my desires and fulfilment…." Another participant stated, "for the sake of humanity, no I won't be ok with it. But if the robots can co-exist without replacing anyone that would be good." This shows how participants think of others and not themselves (Mabovula, 2011). When exposed to a robot that looked like a dinosaur, one participant expressed high concern over the resources used in developing such a robot and eared hunger issues faced by developing countries as more important that the robot.

The findings indicated that adherence to social norms influenced the acceptance of service robots. Some of the participants were aware of the social norms but choose not to adhere to them while others chose to conform to the norms. This led to different reactions when exposed to AI SR. However, both participants agreed that in their culture, the use of AI SR is associated with promoting laziness. One of the participants was determined to uphold the norms by discouraging the use of AI SR while the other was counterculture. The participant who was counterculture stated that: "I don't care what society says, I still prefer a virtual assistant to do my bookings." Other participants, though acknowledging the laziness associated with a virtual assistant, still found them unnecessary, but they were neutral on their acceptance.

In the focus group, religion appeared not to play a role in the acceptance of service robots. However, in one-on-one interviews, there were mixed feelings about the influence of religion. Muslim and Christian participants had almost similar reception towards AI SR, which emanated from their strong beliefs and religious values. Both believed that there is a higher power that can bring life and not human beings. Thus, AI SRs were regarded by Muslims as not having a life, and Christians viewed the practice of introducing robots as something outside God's principle. Thus, both participants showed some strong resistance toward service robots. It was an interesting note that another Christian however felt that their religion had little to no influence on their acceptance of AI SR, with a Hindu participant stating that religion does not affect his perception of service robots. He stated that: "I cannot leave something which is going to benefit me based on religion." Among the participants, there was one traditionalist, and it was interesting to note that the participant was more receptive to AI SR as it was beneficial and necessary for growth. Interestingly, one non-religious participant stated that their non-religious status did not influence their acceptance or rejection of AI SR. These findings support literature put forward by Ertemel *et al*. (2021) that the tensions between profoundly religious societies defending their fundamental values and others whose views are influenced by a more secular perspective may influence if AI generally challenges the underlying assumptions that people hold. The greatest threat to international cooperation and stability can come from extremist groups engaged in severe, politically motivated violence.

Theme 2: Communication

The findings indicated that the acceptance of professional robots is dependent on the language abilities (both verbal and non-verbal) instilled in the robots. While participants had no difficulty in English, all participants emphasised that their acceptance of service robots was dependent on the inclusion of their native language, i.e., African languages in service robots. These were expressed as mother tongue, native language, *IsiZulu*, or *ChiShona*. The benefit of using a native language was that it will be easier for people to communicate and understand and that it is convenient for the consumer. This shows that language is one of the main concerns among the consumer, as echoed by Wakelin-Theron (2021). This also suggests a need for more research and more attention needed in the African language and the inclusion of the African language in AI Service robots as consumers will be able to better relate with the robots (Adams, 2021).

Although there is no correlation between culture, change, and technology, the findings showed that both aspects were interdependent. Most of the participants view culture as dynamic and change as inevitable. Thus, they emphasised that they embraced change in technology as stated by a participant: "a change which caters to everyone". In addition, some participants indicated that although they believed in *Ubuntu*, they still supported technological advancement. *Ubuntu's* philosophy brought into consideration the possible job loss that may cause particularly in an African context where unemployed is on the increase (Wakelin-Theron *et al.,* 2018). One participant echoed this by stating: "We can't ignore technological advancement as a country**";** while another said: "I think Ubuntu has nothing to do with AI but rather AI is just a further development and is a sign of progress"**.** Thus, the introduction of AI SR though it may face resistance in its early stages, participants felt they had no choice but to accept the changes and that continual exposure will eventually lead them to accept the AI SR**.** Other participants viewed their culture to be: "Fascinated by technology so I think they would accept it". This could be an indication of a tech-pro culture within a society, which is amused by technology. In support of these findings, Ramushu (2014),

found that Japan showed higher emotional and social attachment to robots and speculated this to be a result of their long-term exposure to robots.

Theme 3: Identity and Diversity

The participants' individualist and collectivist philosophies influenced their acceptance of AI SR. All the participants showed individualist traits and this trait influenced their acceptance. Most participants indicated that they would accept as long as it benefited them. For example, one of the participants said, "If it benefits me I do not mind"; while another said "If it's going to benefit me, I will go for it." This shows how the African culture embraces the individualist philosophy. However, 80 percent of the participants also stated how their acceptance was also dependent on the benefits AI SR has on society. For example, one participant stated that they would accept if it benefited others or if society also benefited. Some indicated that if it came with the possibility of causing unemployment, then they would not accept it. Thus, one can conclude that, contrary to the general belief that Africans are more of a collective mindset, findings show that Africans are neutral. They think of self and society at the same time. This finding supports the observations made by Ahmad, Ihtiyar, and Omar (2015) that while most South Africans profess to be collectivist, the author detected a lot of more individualistic tendencies among South Africans who prioritise themselves.

The research also shows that 90 percent of males were more receptive to robots than 80 percent of females in both interviews and focus groups. The acceptance of AI SR in males was mostly dependent on the benefits AI SR had on humanity, whilst only 10 percent of the females in the focus group were concerned about humanity. In the interview, however, the two females' acceptance was dependent on humanity. This could suggest that females are more open and expressive in one-on-one interviews and that they are more influenced by other people's views. Both genders showed a preference for AI SR in the tourism industry and a resistance to AI SR if used in the banking industry. Sentiments, which emanated from both genders were "I can't trust AI SR with my money" and "Why should put my confidence in AI SR, anyone can imitate my identity and take my money". Of the 80 percent of the females who accepted AI SR, 60 percent of them personified AI SR and addressed AI SR as a friend and by a name. This may suggest that although females appear to be a bit resistant or slow in accepting AI SR, once a relationship has been developed, it will be an emotional and meaningful relationship. This supports the sRAM which shows emotional relations which develop in Human-AI SR relationships (Fuentes-Moraleda *et al.,* 2020). The findings show that acceptance of service robots increased based on sexual orientation and social inclusion. This concurs with previous research which argues that social isolation, social exclusion, and disconnection, increase acceptance of humanised service robots (Korn *et al.,* 2021). However, according to them, the family life cycle and lack of emotional partners did not increase the acceptance of SR.

Conclusion

This study concludes that culture has an influence on the acceptance of service robots, particularly in an African context. The research recommends that practitioners, service robot developers, and implementers should consider the culture and community of the consumers when implementing service robots. The implication this study makes is that the service industry can use the findings to inform the cultural factors that affect acceptance of service robots, particularly in an African context. This study provides valuable insight for the service industry stakeholders to help customise the design of service robots to create a unique customer experience. The current research focused only on qualitative methods and findings, thus, cannot be generalised. Thus, the researchers recommend a mixed method or quantitative approach to establish the influence of culture on the acceptance of service robots. The themes generated in this study, from a qualitative perspective, could inform the hypotheses development for a quantitative approach with a much larger sample. Future studies can also look at in-depth research in specific African countries to establish if there are similarities in the application of the *Ubuntu* philosophy concerning service roots. Based on this study, culture influences acceptance; thus, this study proposes the consideration of the inclusion of cultural factors in the sRAM model. By considering the cultural factors within the sRAM model, researchers and practitioners can better understand the complex dynamics between technology and society and, thereby, design interventions and strategies that align with cultural values, promote acceptance, and address potential barriers to adoption. This study recognises that different cultures may have varying levels of acceptance, resistance, or expectations regarding the use of these technologies that can impact their implementation and utilisation.

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