ARCADA

Customer Satisfaction with Virtual Assistance in a Hospitality Context.

Simo Mohamed Benchhiba

MASTER'S THESIS	
Arcada University of Applied Sciences	
Degree Programme:	International Business Management
Identification number:	7797
Author:	Simo Mohamed Benchhiba
Title:	Customer Satisfaction with Virtual Assistance in a Hospitality Context
Supervisor (Arcada):	Niklas Eriksson
Commissioned by:	

Abstract:

AI solutions are gaining ground in the service sector, chatbots promise is to alleviate service delivery costs, and to make customer experience more convenient. Monitoring hospitality chatbots' performance through satisfaction studies helps hotel managers to deploy adequate chat service forms and features to match hotels' own online users' expectations.
This qualitative study utilizes Weiss et al. (2009) USUS framework in addition to Wei et al. (2017), and Sarmah and Rahman (2018) insights as a starting-point to explore experiences of four hotels' chatbots in Finland. This exploration is performed through semi-structured interviews.
The homogenous sample of 13 participants' experiences helped answer the research questions: How satisfied are the investigated hotel guests with the conversational experience of chatbots? and What are the possible reasons behind satisfaction or non-satisfaction of the interaction experience with the investigated chatbots?
The results show a clearer impact of functional attributes such as effectiveness, efficiency. Intrinsic features like human-oriented, and empowerment refine satisfaction and add to users' comfort. Hybrid chat models tend to yield more satisfactory results. Awaiting for hotels to adopt advanced conversational solutions, and intelligent service models, the human agents remain an irreplaceable determinant for satisfaction with hotels' chatbots.

Keywords:	Technology, customer service, conversational, virtual agent, chatbot deployment, hospitality, satisfaction, functional features, intrinsic attributes, adoption, hotel, participant, interaction, qualitative method, semi-structured interviews
Number of pages:	
Language:	English
Date of acceptance:	

TABLE OF CONTENTS

Figures

Tables

FOREWORD

During my 16 years of front office work experience in Helsinki hotels, I was able to witness a growing interest of customers in a more convenient, reliable and instant hotel communication. The deployment of a chatbot in my last workplace urged me to think of the possible benefits imbedded in self-service technology. Through this study I seek to understand how chatbots could be satisfactory in meeting the demands of hotel web-site's users, and allow them to help themselves.

1 INTRODUCTION

The level of infusion of technology-based solutions in customer service across sectors has profound impact on service delivery. Automated solutions are increasingly solicited due to the assumed benefits attached to them. Benefits in regard to reducing costs and offering personalized services (De Keyser et al., 2019). This exploratory study attempts to balance the aspirations of AI-based virtual assistance (VA), with a customer perspective at practice. The aim here is, specifically, to explore customer satisfaction with hospitality virtual agents.

The significance of researching subjects related to VA is substantiated by the steady growth of VA's global market value. According to Market and Market Research Private Ltd, (2019), the Global chatbot market size is predicted to grow with a compound annual growth rate of 29,7% for the forecast period 2019-2024, an increase predicted by the same source from 2,9 billion USD in 2019 to 9,4 billion by 2024. This growth is supported by the technological ecosystem behind artificial intelligence, the proliferation of chatbot builders, and also by the growing interest of businesses in using chatbots for customer support, and as a marketing interaction tool at a lower operational cost.

Self-service technology perception, trust, innovative participation, and adoption in a hospitality context have had some interest in academic literature. Cain et al. (2019) have identified 7 major interrelated research themes relating hospitality to AI and Robotics. Weiss et al. (2009), for instance, worked on evaluation frameworks for human-robot interaction. Tung and Au (2018) took Weiss et al. (2019) USUS framework to hospitality in order to assess customer experience with hotels' robotic agents. Researchers have also tried to understand VA's utilitarian attributes and intrinsic features leading to *Transcendent Service Experience*, attempting to fill an empirical research gap on the impact of using technology to improve the hospitality experience (Wei et al., 2017). The literature mentioned is however scarce. What is more, the focus is rather on the technological systems and robots, than on the service experience, while the customer is supposed to be central and technology a mere vehicle. The scarcity is even more aggravated if VA, hospitality service nature, and satisfaction variables are combined. The reason for this is probably due to the novelty of application of this technology in hotels. That is

6

why this study is relevant and contributive for both awareness regarding the potential of VA in hospitality, and for investigating satisfaction of users interacting with a self-service technology.

This study attempts to explore satisfaction with hotel chatbots by answering two research questions:

- RQ1. How satisfied are the investigated hotel guests with the conversational experience of chatbots?
- RQ2. What are the possible reasons behind satisfaction or non-satisfaction of the interaction experience with the virtual agents under investigation?

This study concerns users satisfaction with hotel chatbots, at a certain place and time context, and paves the way to other studies exploring satisfaction with the evolving technology in other contexts. Customer expectations of chatbots become more demanding since AI development and communication habits are changing towards a level where tech is a normality. Virtual assistance in this study refers to the text-mode conversational software programs facilitating interaction between customer and businesses in natural language dialogues, also known as front-end bots, or automated assistants (Topbots, 2017).

For its Literature part, the study at hand relies on reading material, parts of books, articles, journals, experts and software providers' publications encompassing AI, and virtual assistance in customer service contexts, taking into account the fact that chatbot deployment is still at its nascent phase in customer service (Jain et al., 2018). The empirical part uses a developed model from the literature to prepare a semi-structure interview guide. Purposeful sampling is used for both chatbots and participants. To the author's best knowledge, no similar customer-centric qualitative investigation of participants perception of satisfaction with chatbots' performance has been conducted previously in a Finnish hospitality context.

2 VIRTUAL ASSISTANCE FOR CUSTOMER SERVICE

2.1 VA solutions for customer service challenges

The trend for businesses as referred to in (Topbots, 2017) is to include customer experience more and more in their differentiation efforts rather than relying entirely on product and price. The key enabling technological advancements are having an effect on re-conceptualizing customer service and in putting emphasis on experiences. AI in particular, has had a role in bridging distances between providers and customers, especially the use of sophisticated conversational software to stimulate interactions (Buhalis et al., 2019). Customer service has been in a course of change incorporating more and more of technology. Business departments were first staffed to cope with raising demands for information and sales; then opted for call-centers abroad but that too proved to be less cost-effective. Businesses started, then, opting for partial automation of some service functions, ending finally being interested in more relevant and attractive self-service concepts employing virtual technologies (Topbots, 2017).

The shift from face-to-face, high-touch low-tech, to highly virtual interaction as referred to in De Keyser et al. (2019), becomes eminent with the communication preference of users shifting to instant messaging. This pushes businesses to meet consumer expectations by making their existent services available on messaging platforms. A chatbot is, therefore, a logical development to support the traditional interaction means, as Debecker advocated in a Ubisend webinar, *January, 2020.* Chatbots, he claimed, are easy to set, cost-effective, and enhance customer service. VA is claimed, also, to enhance businesses availability, consistency, and social relationships. Thus, enabling extra space for sale's leads and conversion (Ukpabi et al., 2019).

The satisfaction factor in VA deployment in customer service lies first in meeting customers on the channels they prefer to be on. The trend is shifting towards prospects drawing businesses into their favorite platforms, and not vice versa. It is no longer a customer's duty to understand the structure of a business websites, rather it is the professionals' duty to make themselves available for the clients. Chatbots are more for relationship building, and a sales tool than for client acquisition. (Denisselle, 2016).

Experts argue that since customers are prioritizing experience, and expect businesses to respond across a number of channels (calls, messaging, emails, Social Media, smart devices), the costs will be high, time-consuming, and job satisfaction goes low. That is why automation is required. Virtual agents can help customer service by taking over the routine and low level inquiries, while experienced agents can handle strategic issues, and escalating cases (Topbots, 2017). In their article, *From Sci-fi to Sci-fa*, Cain et al. (2019) also advocated the idea of combining human and machine as the winning formula for the hospitality industry. The opportunity in deploying chatbots in customer service lies in reaching significantly lower support costs, lower resolution time, and better morale for support teams. At this stage of AI development the best possible practice to opt for is a "cyborg" model where machine and people work together in tandem. A hybrid model attains 35% more efficiency than agent alone (Zhou, 2017).

Apart from the opportunity in consumer chatbots in B2C context, there is an equally appealing potential in virtual assistance in B2B context, as well as internally in enterprises. Chatbots are applicable for B2B activities such as for procurement, and suppliers. Internal conversational chatbots applications comprise engaging with recruits, HR, and IT support for employees. Deloitte (2016) argues that chatbot application in such internal activities brings greater efficiency, productivity, and ease-of-use. Moreover, Chatbots are the preferred channel of interaction with co-workers and with company's applications, because employees are accustomed to using messaging applications in their private lives, especially younger generations (Schatsky and Gratzke, 2016).

2.2 Future customer service models and conversational trends

The future of customer service is closely attached to cognitive technology and automation. Machine learning and natural language processing has made it possible to engage in relevant dialogues with customers. This results in messaging as an attractive online interaction activity. Simultaneously, other channels have started to experience some weariness such as "app-fatigue", or phone waiting queues, low opening-rate of emails (cold email lists), and "banner fatigues" (Topbots, 2017; Neil Patel, 2017). Sirnivasan et al. (2018) study, on behalf of Accenture Digital, concluded that chatbots have a bright

future simply because the potential benefits are hard to ignore. As a result, businesses need to consider new customer service (CS) models taking advantage of conversational chatbots, without compromising customers' satisfaction in an always-on society. The future of VA in CS is driven by profitability, and efficiency signals, while the future CS models are shaped by trends where performance, and satisfaction are key to success.

The future models of customer service according to Accenture (2019) are shaped by pressure on companies to significantly raise their customer service level. The new models are characterized by optimized personalized service, and wider integration capabilities. Traditional inefficient service models have to be replaced with intelligent ones that delivers experiences just as the increasingly impatient customers wants them, solving issues faster with little efforts. Accenture, (2019) warns that companies still using rigid, and costly service models find it hard to solve customers' issues immediately, and lack visibility into the reasons behind retention and revenue issues. The change in service perspective is also corroborated by Buhalis et al. (2019), arguing that service innovation is a key source of competitive differentiation as technology inevitably impacts service management at the strategic, operational, and physical levels.

The future conversational AI trends that support the new service management models advocated above by Accenture (2019) were also referred to as market and technological trends in Boost.ai (2020). These future trends are:

1. As customers are increasingly using virtual assistance, businesses will be capitalizing on this and make VA central to their service strategy. A *"chat-first" approach* is already noticed in Norwegian bank SR-Bank, and KLM 's chat first with BB (BlueBot) as a helpful crew member.
2. CS employees, previously identified at high-risk of redundancy because of automation, will be positioned to be up-skilled into artificially intelligent *crucial role* of training bots to deliver a more human-like customer experience. As routine duties will be automated, the traditional support role will change to a more customer-focused, taking over complex cases.
3. Virtual agents features are evolving beyond *functionality* to incorporate capacities that allow more meaningful dialogues, and complex transactions and predictions owing to more APIs integrations. This is crucial to stimulate VA solutions credibility and adoption. Building customer interactions of the future will also have to be founded on industry-specific intents first, and topped-up with brands specific content (Boost.ai, 2020).
4. Extending technology application to have larger organizational structures using one *virtual agent network*. Individual bots handle specific tasks, and transfer customers seamlessly between virtual colleagues. A Finnish governmental project called *Starting up Smoothly* piloted in Finland in 2018 employs a network of independent but intercon-

nected chatbots to answer questions on taxation, immigration, and patents. This solution raised cross-organizational collaboration level within the network (Miessner, 2019).

2.3 **Customer perception of VA use in CS**

Virtual Agents are, in essence, communication channels, if customers are not interested in using them, and traffic is not drawn to them, they become useless. The tendency, however, is that customers like using them, and intend to use them more, they expect better performance and more personalized service. Firms see the benefit of that by cutting costs per interaction, offering convenience and instantaneity.

Customers view of chatbots is pictured in an interesting 2019 statistical sheet on chatbots in terms of consumer sentiments, business profitability, and impact on industry. The statistical sheet is composed by Ubisend on the bases of a number of researches between 2016 and 2018, adapted here in table 1. Percentages in the rows are of different studies. The table is expressive of the positive implications and the encouraging reactions of customers.

Table 1: Customer sentiment in regard to chatbots in customer service, adapted from Ubisend, (2019).

Sentiment about Chatbot in Customer service	*Implication for customers*
27% worldwide interested in AI-based tools	Look at AI as a tool they can use
27% would buy basic items through chatbots	Desired product thru desired channel
48% would rather use live chat than other contact channels	Pushing business to employ live chats, easier interactions
57% interested in chatbots for instantaneity	No one wants to wait anymore
40% don't care if chatbot or a real human is helping them	Market has to meet trend instant response over human
55% want to interact with businesses through messaging apps	Changing preference, we use channel preferred
95% believe customer service is major beneficiary of chatbots	Craving for instant response
48% prefer chatbot that solves issues over one with personality	Drive to efficient use of AI/performance

Table 2 summarizes customers view of chatbots in customer care. The survey was elaborated by the independent research firm Survata in 2017 and commissioned by LivePerson. The survey had 5002 respondents interviewed from 6 key markets: Japan, USA, Germany, England, Australia, and France (Bradbury, 2017). The summary table hint at the general acceptance to interact with chatbots in customer service.

Table 2: Customers perception of CS chatbots, adapted from Bradbury (2017).

67% used chatbots for customer support, 25% to buy
52% of global consumers would not wait more than 2 min to consider experience as excellent
Globally 38% view interaction with a chatbot as positive, 51% neutral, 11%negative.
Consumers no longer perceive chatbot as used to cut costs.57% of millennials globally recognize chatbots are to give a better & faster service.
52% of DE, 57% JP would prefer to talk to a chatbot rather than Human; Still globally 56% would even wait shortly to talk to a human, for reasons of understanding, reliability, and empathy
67% want to be directed to a human if the chatbot does not understand their need
55% of global consumers would prefer chatbot over human if chatbot is similarly accurate.
Majority prefer the bot for simple tasks, and a human for complex issues. Check balance 71% chatbot, but to pay bills 54% want to speak to human
Globally only 33% care if a chatbot has a name and personality, out of these 62% prefer a friendly chatbot personality, 21% formal. (In JP 51% want it formal)

In another Ubisend (2017) chatbot survey, the majority of consumers have not yet used a chatbot to communicate with businesses; however, the awareness of virtual agents as a communication channel is growing. The overall impression of brands that adopt chatbots is positive, 43% see it as innovative and 30% see it as helpful. Surveyed customers classified what is most important in communicating with a company as follows: 68% to reach desired outcomes, 48% for an easy experience. In the same 2017 Ubisend chatbot survey, 69% of the respondents declared that they would engage first with chatbots because of their instantaneity.

Customer perception of VA, as pictured above, is generally positive. Trust in chatbots tends to rise in connection to the rate of adoption within the service sector in general, and also due to the embedded natural language understanding capabilities allowing reliable interactions. Customers' acceptance and adoption is expected to rise because messaging is by far the preferred way to engage. Roberto LoCascio, in his interview for Topbots, see it as even becoming standard. He also added that 60% of all interactions can be automated provided that companies upgrade their back-systems (Zhou, 2017). Dixon et al. (2017) states, for a Harvard Business Review, that 80% of customers try to handle matters themselves before contacting live agents. The review also argues that customers call businesses only because they have no other choice. Customers are developing their technological skills, they want to help themselves and expect brands to embrace self-service technology (Zendesk, 2019).

2.4 **VA use and benefits for hospitality**

A number of theories such as the mimetic, normative, and coercive Isomorphism, or the organizational learning theory tried to foretell the rate of adoption of self-service technology in hospitality, noting an edge for hospitality firms with technological competencies to be faster in adoption (see Ukpabi et al., 2019). One thing is clear throughout these theories, the strategic question is no longer on whether or not to adopt a type of self-service technology, but on how to leverage the adequate attributes of this technology to stage a memorable experience, and a competitive edge (Wei et al., 2017).

The benefits and limitations for customer service in general are applicable in hospitality too, but there are more considerations typical to this sector, making chatbot deployment rather specific. Hospitality by nature is *an information intensive industry* where firms are offering services to customers away from their surroundings, cultures, and languages. Intensive information and regular communication is obligatory to convince guests of the hedonic value for their resources: money and time (Buhalis et al., 2019). The intensive inquiry volume is also because hotels need to sustain loyalty and maintain consistency of a high service level. An area where virtual assistance can be helpful.

The implementation of virtual assistance can help hospitality businesses in a number of ways pre-, during, and post-stay experiences. Chatbots can be specifically helpful in enhancing quality of hotel guests' pre-arrival experience, allowing users to book rooms, personalize stays, order amenities, book restaurants, airport transfers, spa treatments, share the plan of their visit, ask help with timetables, city tours, driving directions, weather or security information. Such interactions with guests at this customer experience touch-point makes chatbots a fertile ground with valuable data enabling hotel systems to build on for meaningful predictions, but also, to provide hotel staff with confidence, information, and agility to deliver personalized service, and raise up-selling and cross-selling revenues (Ukpabi et al., 2019).

What chatbots can interestingly do at this early stage of the customer journey is *simplifying* guests' pre-decision making (Ukpabi et al., 2019). Simplifying them by being accessible on the webpage, suggesting guidance to use the site, helping to go through hotel FAQ information, and answering queries promptly with reassurance and knowledge. By being easy-to-use, convenient, and ready to escalate to live agents, chatbots can give a

good first impression of the hotel brand in a highly competitive market. They can also handle many enquiries at the same time and on different platforms, 24/7, even without anomalies as those attached to human agents due to fatigue and burnout. In addition to the concierge services and the *informational function*, chatbots in hospitality can undertake also *transactional functions* such as handling payments and issuing receipts; and *marketing functions* such as segmentation, post-stay feedback and campaigns, spotting sales leads, and conducting surveys if they are trained, and connected to hotel's back systems, CRM and APIs. (Ukpabi et al., 2019).

A Smart virtual agent with advanced capabilities can take the application in hospitality context to a further extent. The accumulation of digital footprint aggregated from multiple chatbot interactions and other customer contact channels can be used to fill in customers profiles and loyalty levels. This allows visibility into trends, generate meaningful loyalty programs, and even shape certain services or products.

Hotels depend on guests' satisfaction with their services to fuel favorable feedback on reviews and social media to stimulate retention and customers acquisition. Chatbots could be helpful to account for all feeds. The increasingly growing self-service economy, where 70% of customers expect businesses to have a self-service applications on their website (Steven Van Belleghem, 2013) makes hotel chatbot deployment plausible. Moreover, The huge cost difference between traditional channel service, and do-it yourself transaction (7$ in B2C, 12$ in B2B in the first option, while few pennies in the latter) (Dixon et al., 2017) is also attractive for hotels to consider chatbot deployment.

2.5 Deployment and ethical considerations

A number of chat implementation strategies are considered within the customer service sector mainly from providers like Topbots suggesting a six-step implementation strategy (Topbots, 2017). Ivanov and Webster (2017) suggest to look at different use-implication considerations, and running cost-profit analysis before deployment. Good deployment starts by asking the right questions so as to implement an efficient and reliable solution.

Sample questions can be summarized here to guide practitioners brainstorming ahead of a VA deployment decision: Persistent questions like: What deficiency the solution is intended to address, or is it to capitalize on a strength?, What are the priority goals for

such deployment?, What is the level of implementation needed, and according to what routing rules chatbot escalate to human agent? What is he degree of integration to back-systems needed to get most value of VAs?, What type of communication, design, and personality is the chatbot going to embody to represent the brand? (Froehle, 2006). How to detect frustration and minimize error rates?; What new competencies would be needed to maintain and train the chatbot?, and what are the new roles of frontline employees?. Many questions in regard to specific design, organizational questions, frontline employee, and customer considerations have to be answered (De Keyser et al., 2019). More specific questions applicable to hospitality need to be researched, like volume of enquires, number of repetitive FAQ questions, response time, issue resolution time, gap analysis in processes, and chatbot ROI calculation (Ubisend Webinar, Dec, 2019).

Contemplating on these questions would make the implementation success measurable. In hospitality, a good implementation stems first from integrating chatbot as a communication tool in marketing strategy, empowering it, and preparing teams to work in a hybrid model with the chatbots to improve productivity, and to reach a seamless customer experience. In short, the service management model as a whole should incorporate the chat service implications (Buhalis et al., 2019).

Whatever the degree of VA deployment is, many ethical issues fuel some of the rejecters' argument. Issues could be generally classified into technological, social, or legal. The *technological issues* having to do mainly with the immaturity of current conversational solutions, raising fears of chatbots not being able to understand intents, and thus risk customers not using them (Srinivasan et al. 2018). LoCasio's interview, (Zhou, 2017), also states the risk of having bots with high level errors and low satisfaction rates (less than 70%) in case bots are scripted without being hooked to back-systems, or if made by people not knowing the company's customers. Topbots (2017) also corroborates on this pitfall in cases where virtual agents are unable to detect user frustration, do not have access to customers profiles, do not have clear escalation rules, and not consistent with changes of policy or with other platforms.

Researchers have also raised ethical issues causing *social concern.* The concern for those whose job require repetition of a task, because these might be substituted by more productive and cost-effective bots (see Cain et al., 2019). Internal employee resistance

to change could be a powerful social factor if employees do not accept this technology and believe their jobs are in danger. Managing change is primordial for success. Physical and operational changes including trainings, processes, job duties have to be reconsidered, and made more enjoyable by technological assistance (Cain et al., 2019).

Although virtual assistance deployment alleviates much of the legal burdens associated with hiring, training, contract termination, unions, healthcare, and the considerable savings that could be made due to the technology, *legal concerns* around chatbots liabilities, and questions of protection of customer information need more legislations to clarify it (Cain et al., 2019). Also chatbots may require access to credential, profile information, and enterprise data to perform useful functions, which makes compliance with cyber security standards mandatory (Schatsky and Gratzke, 2016). The introduction of the GDPR framework demands explicit consent of users to save and use their data, which needs to be accounted for in chatbots' deployment. Targeting is to be based on products consulted rather than on the persons consulting them (Ollion, 2018).

3 SATISFACTION WITH SELF SERVICE TECHNOLOGY IN HOSPITALITY

3.1 Satisfaction with self-service technology

Generally speaking, satisfaction is a value judgment on a complete service experience. In a hedonic-dominant context such as hotels, value judgment comprises both utilitarian and experiential dimensions of the experience (Prebensen and Rosengren, 2016). In this study, satisfaction is captured *at only one customer touch-point* within the process of value creation; namely, the interaction with the text-based hotel chatbots.

Based on the VA claimed benefits in literature, it is possible to deduce that the virtual assistance promise is to ultimately decrease service costs, and improve usability and user experience. This is possible if the virtual solution is well deployed, incorporated in strategy, and featuring attributes influencing customers subjective perception of value for their resources. Prior studies denote that both utilitarian, and intrinsic dimensions are important for assessing satisfaction. These studies also agree that the *functional aspect* has a greater impact on customer satisfaction. Prebensen and Rosengren (2016) found in

their study that functional value has more influence on satisfaction in both hedonic- and utilitarian-dominant services.

In a more specific study on the power of self-service technology (SST) in hospitality, Wei et al. (2017) revealed that functional, performance-related attributes have a more dominant role in the satisfaction with SST, while *intrinsic attributes* are more relevant in a memorable experience evaluation. Froehle (2006) also indicated that, regardless of medium richness, be it phone, email or chat, characteristics related to task-execution are more influential in customer satisfaction. This dichotomy is essential for hospitality chatbot providers to know. It would help design engagement solutions capable of distinguishable functional outcome, and also a pleasurable interaction. This helps to level up the chat experience to the overall acceptable service level promised by hotels to customers in all live and virtual exchanges.

The emphasis in a text-based chatbot design, according to the above three mentioned sources, should be on the integral performance of attributes such as convenience, efficiency, ease-of-use, instantaneity, knowledgeableness, and consistency. On the other hand, intrinsic attributes such as enjoyment, engaging, empowering, co-creation (Wei et al., 2017), and the ability to maintain conversation, personality, small-talk, empathetic traits are believed to enhance the interaction experience, and add to the positive evaluation of chatbots (Jain et al., 2018). Satisfaction is then a result of the solution's usefulness in enriching guests' lives by getting things done. It is also its ability to simultaneously nurture a pleasant dialogue where customers perceive value, feel control, and proactively co-create the experience.

A more technical perspective of satisfaction lies in the chatbots' capability to detect and *eliminate frustration risk*. The challenge is to reduce frustration by reducing resolution-time and transaction-time during interactions, and by having clear routing rules. Routing strategies, which enhance the functional satisfaction of chatbots include: routing clients to the correct department instantly and at the first try, customers with more risk of churn are routed first, escalating to the last contact agent spoken with so as not to repeat the inquiry context, best leads are routed to the top agent for best yield and retention purposes, cross-selling while on queue, and routing externally to experts outside the enterprise (Topbots, 2017). Another technical attribute, stressed also by Jain et al. (2018) as

17

avoiding frustration, is the ongoing clarity. Chatbots should clearly indicate to users their scope of knowledge and task abilities so as to avoid later disappointment.

In accordance with prior literature findings, the key elements contributing to satisfaction with virtual agents in a hotel can be classified into two divisions: functional/utilitarian, and intrinsic/emotional. Both elements are interconnected to allow co-creation of value and add to the positive perception of self-service technology. Satisfaction with the conversational solution in a hedonic-dominant environment is important because it contributes to retention and loyalty (Botanalytics, 2019); while cases of poor service might go viral despite of company's efforts to contain it (Dixon et al., 2017).

3.2 Chatbots' key attributes and the satisfaction evaluation model

Hotel practitioners initiating a plan to customize a conversational solution should include the functional and intrinsic dimensions in its conception. These are required to enhance the functional usefulness of the solution, as well as to add enjoyment to the interaction experience. The exigency at this point is to fit these satisfaction requirements in a text-modality form where interactions are limited to a message exchange between an end-bot and a human. Instantaneity, convenience, easiness, knowledge, media richness, and naturalness of response are expected by users. Satisfaction with human-bot interactions for customers is when the solution is more human-like (Cain, et al., 2019), even exceeding humans in terms of availability, scope of information, consistency, and cost-effectiveness.

In order to better understand the attributes' role in satisfaction with the chatbot interaction in a hospitality context, it is possible to use the Evaluation Factors in The USUS framework by Weiss et al. (2009) to evaluate human-robot interaction (HRI). This has been, to a certain extent practiced in a hospitality environment by Tung and Au (2018) who capitalized on this framework to evaluate HRI in four hotels, using the five user experience indicators: embodiment, emotion, human-oriented perception, feeling of security, and co-experience. The USUS evaluation framework is a human-centric perspective evolving around factors of Usability, Social Acceptance, User Experience, and So-

cietal Impact of robots, and may be used in a hospitality context to evaluate customers' perceptions of service robots (Weiss et al., 2009).

This study limits the application of the USUS dimensions to the first two factors: Usability, and User Experience, and extract it from the robot interaction to apply it on the interaction with chatbots. In order to have a complete view of all the necessary elements affecting satisfaction, usability and user experience satisfaction factors are combined with the *driving forces* behind customers participation in an innovative technology-based interaction. Hotel website users' own psychological dimensions like ability, innovativeness, need for interaction with hotel staff, and willingness to co-create represent a driving power behind innovative service adoption (Sarmah and Raman, 2018).

The USUS Usability indicators to assess satisfaction with the *functional quality* of chatbot match the utilitarian attributes, endorsed by Wei, et al. (2017) in hospitality in notions of convenience, saved time and efficiency. These indicators, as defined by Weiss et al. (2009) and adapted for this study, are:

1. *Effectiveness:* The degree to which tasks are accomplished error free.
2. *Efficiency:* The speed and accuracy at which the task is accurately completed, saving customers resources time and efforts.
3. *Learnability:* Familiarity, predictability, simplicity and ease of use, the chatbot design has to be easy enough to accommodate prospects with less skills too.
4. *Flexibility:* It describes the possibility for customers to communicate with the system in different ways, languages, formal, informal forms etc.
5. *Robustness*: The ability of the chatbot to prevent errors by being responsive and allowing conversers to correct their own errors on their own.
6. *Utility:* How the chatbot supports users to reach the goal and perform informational and transactional tasks. Utility includes the use of for instance links and rich media.

The USUS User Experience Evaluation Indicators to assess experiential attributes are categorized as intrinsic attributes, and endorsed by Wei et al. (2017) in notions of empowerment, engagement, enjoyment, confidence, and personalization. These were used also by Tung and Au (2018) in exploring customer experiences with robots in hotels. These indicators are:

1. *Embodiment:* An optimal anthropomorphic behavior and human-like appearance impact conversers' expectation and perception of chatbot competence, attractive-

19

ness and warmth. Behavior and personality, empathy, and humor within the text-mode, feed understanding and satisfaction. (De Keyser et al., 2019)

2. *Emotion*: Emotions aroused during interaction. The emotion joy is felt when exceeding users' expectations. This is an important indicator for satisfaction as customers tend to interact with bots socially.

3. *Human-oriented perception*: This is related to a chatbot ability to track human insinuated intents in a text-based mode, recognizing expressions, tracking frustrations and ability to respond correctly. An acceptable level of natural language understanding and processing is necessary for a positive assessment.

4. *Feeling of security:* Security issues arise in interactions, chatbots designed to enhance users' comfort and eliminate fear and risks related to privacy and personal information divulging.

5. *Empowerment:* Users' feeling that they have control over their fate, affect the outcome of the interaction, and the creation of the service or task to be completed.

6. *Co-experience:* Refers to experience and relationships developing during interaction. A positive level may entice users for future intention to use the chatbot, which is expressive of satisfaction with the chatbot experience.

The other dimensions complimentary to the satisfaction evaluation with chatbot interactions are related to the conversers' own disposition. Users' disposition includes innovativeness, ability, socialization, willingness to co-create, and their participative behavior. These were defined by Sarmah and Rahman (2018) as the driving forces for users' participation in hotel service innovation. The two variables, *role clarity and customer ability,* are found to directly influence satisfaction. While satisfaction influences customer loyalty and future co-creation intention. This study borrows the two variables from the Sarmah and Rahman (2018) in order to build up an inclusive understanding of all the elements relevant to satisfaction in a conversational chatbot context.

1. *Role Clarity:* Customers get a clear idea about the role to be performed by them and the expected outcome out of the interaction with the hotel. Clarity was also stressed by Jain et al. (2018).

2. *Customer Ability:* Customers skills and knowledge, enabling them to perform in a co-creative interaction (see Sarmah and Rahman 2018).

Figure 1 represents the different attributes used as indicators for satisfaction evaluation purposes. It represents also the customers' driving power elements encompass-

ing interactions with chatbots. This figure constitutes a guideline on how satisfaction is to be explored in the empirical part of this study. The aim is to help answer the research questions: RQ1. How satisfied are the investigated hotel guests with the conversational experience of chatbots? RQ2. What are the possible reasons behind satisfaction or non-satisfaction of the interaction experience with the virtual agents under investigation.

Figure 1: Model of chatbot dimensions impacting satisfaction inferred from combined prior literature (Sarmah and Rahman., 2018; Wei et al., 2017; Weiss et al., 2009)
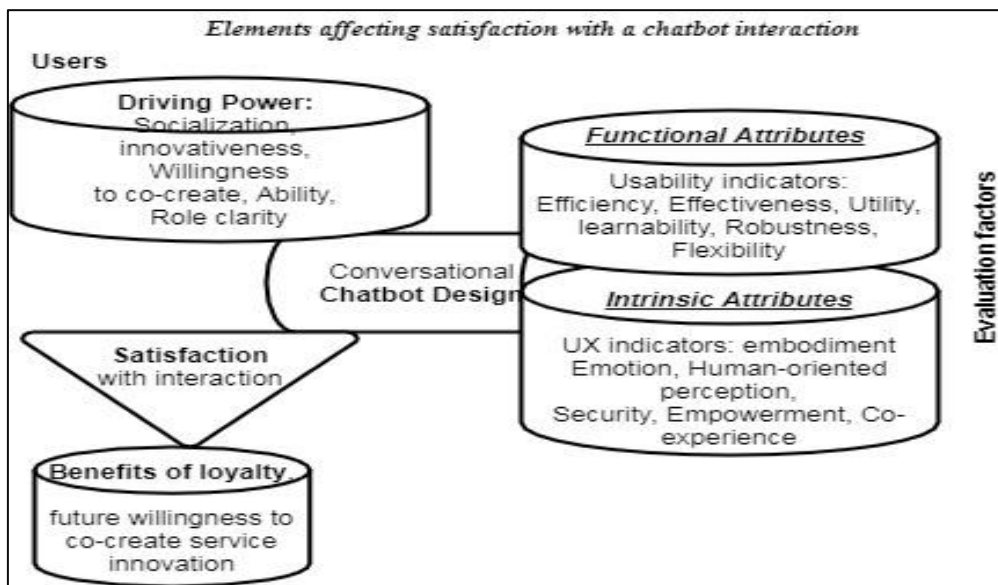
4. METHOD

This study employed a qualitative research method, using semi-structured interviews to extract insights out of participants' experiences with four hotel chatbots. The participants involved represent the main source of data. The semi-structured interview guideline (Appendix 1) is constructed by following the satisfaction determinants advocated in the contributions of Weiss et al. (2009) USUS methodological framework, Wei et al. (2017) bi-dimensional conception, and the driving forces by Sarmah and Rahman (2018), see figure 1.

The qualitative method employed in this study indulges in thirteen participants' experiences and perceptions of satisfaction with the chatbots in a specific context. The aim is not to generalize their judgment, but to indicate a tendency of specific chatbot features

affecting satisfaction, answering, thus, the research questions at hand. The choice of semi-structured interviews supports the study as,

> *"...semi-structured interviews explore the experiences of participants and the meanings they attribute to them. Researchers encourage participants to talk about issues pertinent to the research question by asking open-ended questions, usually in one-to-one interviews. The interviewer might re-word, re-order or clarify the questions to further investigate topics introduced by the respondent."*
> (see Tong et al., 2007 P: 351).

The study is also expected to induce insights outside the research questions due to the method's inductive nature, where the starting model for investigation is not definitive but flexible, as entitled in qualitative methods according to Braun and Clarke (2006).

4.1 Participants sample

The sample of participants was carefully chosen to match characteristics which are important for this study. These characteristics are: role clarity, ability, education, age, availability for one-to one interviews. Out of 20 prospect participants approached, 13 enthusiastic members, forming a homogenous group, fulfilled the required attributes to qualify for interactions and interviews without compensation. 10 members were approached through Espoo Friendship Association (EFA), and 3 are the author's professional acquaintances.

Role clarity is fully realized as all participants had a clear idea of what a chatbot interaction is either due to their professional background or due to their confirmed experience with chatbots in different service sectors, but not with hotel chatbots. *Ability* to share in this experience was also fully realized, because of their vast technological understanding, high educational degree and avid use of messaging platforms in their daily life. The participants also confirmed their interest in and need for frequent travelling for leisure or professional reasons. The sample participants' *age* deliberately excludes millennials and seniors as these segments might have different pre-requisites than mid-aged professionals. All participants expressed their *availability* for long session interviews and willingness for a later data-confirmation meeting if necessary.

Table 3 shows the participants' characteristics. It demonstrates also that the sample at hand is a quite homogenous sample, and details each member's participation in terms of the total chat interactions, saved logs and the combined chat time with chatbots, and the one-to-one interview time with the author.

Table 3: Sample participants homogeneity and participation

Participants	Age	Education	Role Clarity	Ability PISI	EXP.chatbot outside hospiality	EXP. hotels' chatbot	Freq & interest travel	Chat interac-tion	saved logs/ duration chat	Interview time min.
AR3	45-55	Graduate	True	True	True	False	True	1	1/41min	43
BM9	45-55	Post graduate	True	True	True	False	True	4	4/26min	53
EF8	35-45	Post graduate	True	True	True	False	True	4	3/33min	49
EV2	25-35	Post graduate	True	True	True	False	True	2	3/7min	43
JA10	35-45	Post graduate	True	True	True	False	True	2	2/24min	63
JL12	25-35	Graduate	True	True	True	False	True	4	1/36min	80
MB5	35-45	doctoral/post doctoral	True	True	True	False	True	1	1/13 min	38
OA6	35-45	Undergraduate	True	True	True	False	True	4	1/13 min	46
OE11	35-45	doctoral/post doctoral	True	True	True	False	True	3	3/33min	58
PC13	25-35	Graduate	True	True	True	False	True	2	4/18min	70
SP1	25-35	Graduate	True	True	True	False	True	2	0	37
YB7	45-55	Post graduate	True	True	True	False	True	1	1/11min	54
YZ4	25-35	Post graduate	True	True	True	False	True	2	1/17min	45

4.2   Data collection procedure

Data collection proceeded in the following 7-step order:

- Step1: The 13 qualified participants were briefed over the phone regarding the context and the background of the study and on their participation scope. They were also encouraged to think of a hotel inquiry situation, and to book a convenient time with the author on Zoom for a one-to-one video meeting, as the ongoing Corona health Crisis necessitated social distancing.
- Step 2: The semi-structured interview guideline included a figure describing the theoretical determinants of satisfaction with chatbots (Figure1), and chatbot links were dispatched to the participants by email. They were encouraged to think of the usability and user experience features of chatbots ahead of trying the chatbots in this study.

- Step 3: Most of the participants prepared their inquiries and selected one or more of the following chatbots: KK Väiski, HelkaBot, Imatran Kylpylä Sam, and SveitsiBot for interaction. The author monitored some of the participants interactions with chatbots through a shared screen. 25 chat logs were saved in a separate file, and 8 chats were not saved for technical reasons. The total scripted interactions lasted 272 minutes.
- Step 4: The chat logs were examined in preparation for the interviews, and kept for later verification by the author to cross-check participants claims during interviews.
- Step 5: Zoom video interviews were held on a one-to-one basis, open discussions reaching acceptable interview durations, 52 min on average, "*The prolonged interview sequences allow enough time to ensure congruence between the concept developed, and the observation*" (see Bryman and Bell, 2015, P 400). Interviews were held in participants chosen language or with combination of English, Finnish, French, Arabic to allow better understanding. The video interviews were all recorded and saved.
- Step 6: The recorded videos (672 minutes in total) were viewed, then reviewed and transcribed manually.
- Step7: Some participants were called or FB messaged to verify, or confirm statements that were not clear from the recordings. A necessary cross-checking enhanced trustworthiness of the translated transcripts (Bryman and Bell, 2015).

The figure 2 is an the example of one of the four chatbots that were investigated.

Figure 2: An example of one of the chatbots interacted with
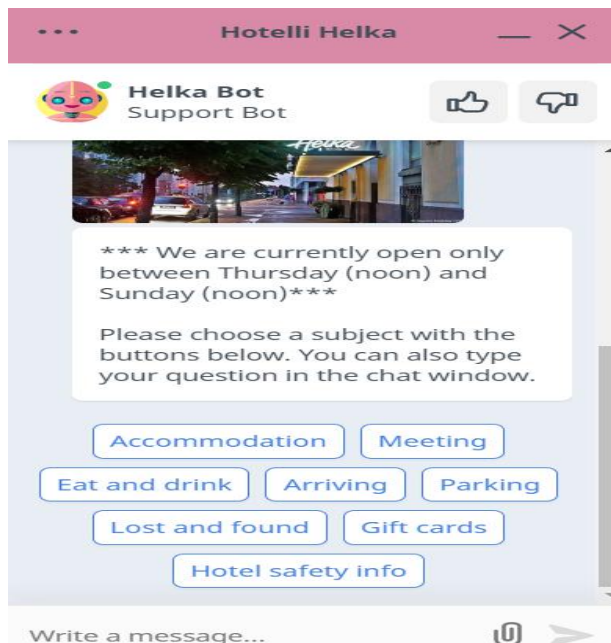
4.3   Data analysis

The collected data from the semi-structured interviews together with the interaction scripts were processed in the following way:

The 13 interview transcripts were manually scrutinized for insights related to satisfaction status with the chatbots interaction, and other features deemed by participants as affecting the general impression of the service. This first data treatment yielded prevalent insights related to the research questions as well as other themes such as chatbot adoption, chatbot models, external elements affecting chatbot interactions, consistency performance, and recommendations for a better experience. All in all, 445 insight were identified, out of which 145 insights showed participants clear convergence of opinion on different themes. This first data treatment allowed also a summary of the participants' expected features in a hotel chatbot (Appendix 2).

Using Excel sheets, the transcripts at this stage were examined for participants' evaluations specific to the researched questions in order to get a detailed satisfaction representation to confirming tendencies of satisfaction or frustration. Participants' evaluation of chatbot functional and intrinsic attributes were registered in Excel. The raw data can be found in appendix 3 and it was coded according to:

- True: Satisfactory or acceptable chatbot attribute performance
- False: Not satisfactory performance of chatbot attribute
- NC: Neutral, participant could not confirm satisfaction or frustration with an attribute.
- False*: A chatbot attribute is not satisfactory unless the support agent is involved in the interaction.

To identify functional attributes of chatbot satisfaction, six usability features (effectiveness, efficiency, utility, robustness, flexibility, learnability) were used from the framework in figure 1, five features (knowledge, instantaneity, routing, access, usefulness) were identified from the analysis of the empirical interview data. These eleven attributes constitute the functional set of features.

To identify intrinsic attributes of chatbot satisfaction, six intrinsic features (embodiment, emotion, human-oriented, control and empowerment, feeling of security, co-experience) were used from the framework in figure 1, and two features (selling, ability to maintain dialogue) were identified from the analysis of the interview data. These attributes constitute the intrinsic set of features.

25

The participants were also asked to evaluate the functional and intrinsic sets of attributes separately on a scale between 1 and 5 where, 1: frustrated, 2: not satisfied, 3: somewhat satisfied, 4: satisfied, 5: happy.

5. RESULTS

5.1   Satisfaction level with the chatbots

In response to RQ1, regarding users' level of satisfaction with the chatbots, a generic evaluation of the chatbots is presented. The intrinsic and functional aspects were evaluated on a scale between 1 as frustrated and 5 as happy. This resulted in the generic satisfaction distribution shown in table 4. The table includes also the purpose of the chat session, and the chatbots interacted with. It does include also the future intention to use for both informational and transactional purposes, which gives n idea of the level of satisfaction attained.

The significance of the generic evaluation lies not in the numbers as the sample is small, but in the distribution of these impressions. No one was generally happy about the functional aspect of the chatbots mainly due to the inconsistency of performance between common, specific tasks, missing human support in most interactions, access, and low effectiveness. 3 participants had mixed feelings and were somewhat satisfied, 4 declared that they were satisfied, while 3 participants declared not satisfied, and another 3 were even frustrated. The intrinsic aspects revealed a slightly better satisfaction, at least 1 out of 13 participants was happy. There was less frustration in this regard as 8 out of 13 participants were somewhat satisfied, satisfied, or happy.

It is interesting to see how the average level of satisfaction with the four chatbots had little effect on the participants clear intention to use the same chatbots in the future for informational ends. It did, however, have almost a total negative effect on the participants intention to use these bots for transactional purposes (Columns 5 and 6, table 4).

Table 4: Participants 'chats, evaluation and future intent to use

	Chat purpo...	HotelBot ...	Eval. Intrinsi...	Eval.Functio...	FIUIP F...	FIUTP Fut...
AR3	informational+	Imatra Kylpyl	Somewhat satis	Somewhat sati	True	False
BM9	informational+	Multiple chat	Somewhat satis	Somewhat sati	True	False
EF8	Informational	Multiple chat	Satisfied	Satisfied	True	False
EV2	informational+	Multiple chat	Frustrated	Frustrated	True	False
JA10	Transactional	Multiple chat	Happy	Satisfied	True	True
JL12	informational+	Multiple chat	Not satisfied	Somewhat sati	True	False
MB5	informational+	Imatra Kylpyl	Somewhat satis	Satisfied	True	False
OA6	Informational	Helka	Not satisfied	Not satisfied	True	False
OE11	informational+	Multiple chat	Somewhat satis	Frustrated	False	False
PC13	Informational	Multiple chat	Frustrated	Not satisfied	True	False
SP1	Informational	Multiple chat	Not satisfied	Not satisfied	True	False
YB7	Informational	Klaus K	Satisfied	Satisfied	True	False
YZ4	Transactional	Helka	Somewhat satis	Frustrated	True	False

Based on this initial evaluation it is interesting to look next at the reasons behind instances of satisfaction and dissatisfaction during with the investigated chatbots.

5.2   Reasons to chatbot satisfaction and dissatisfaction

To respond to RQ2: What are the possible reasons behind satisfaction or dissatisfaction of the interaction experience with the virtual agents under investigation?, an evaluation of functional and intrinsic attributes was elaborated. Figure 3, represents the results of the participants' evaluations of each attribute separately. The blue curve represents the usability aspect of responses, and the red one refers to the emotional effect of responses on participants. Attribute confirmation percentages on the y-axis are deduced from number of total confirmed evaluations divided by the total possible evaluations. For example, 13 out of 13 participants (100%) confirmed that the chatbots in question were instant. The x-axis contains chatbot features from the literature and those identified in the interviews, functional in blue, intrinsic in red color.
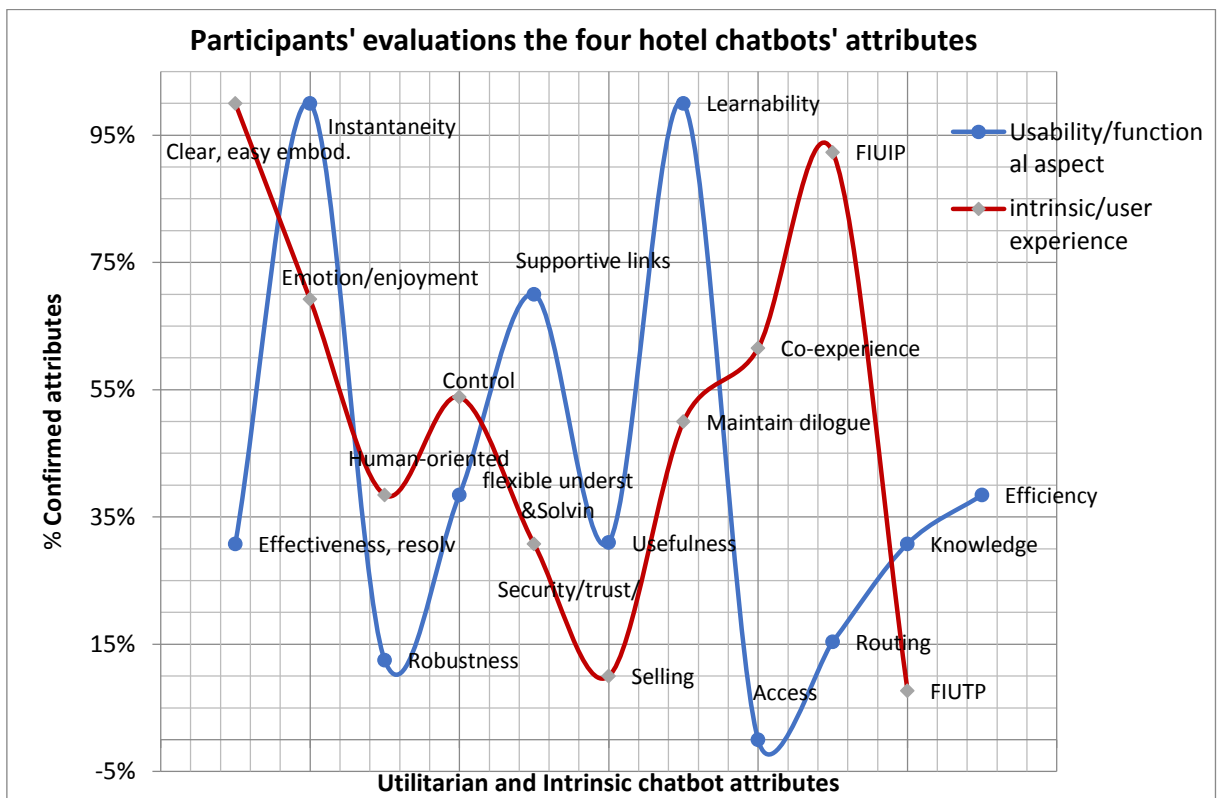
The first observation is that these curves are fluctuating, whereas in an optimal model, at least the most decisive features for satisfaction would score high. Noticeable also that the majority of the attributes have a less than middle range confirmation, denoting that they were not consistently confirmable throughout all interactions. Features such as effectiveness 31%, efficiency 38%, and knowledge 31%, human orientation 38% and routing 15% could be considered as scoring very low because these attributes constitute the backbone for efficient task-resolution, and smoothness of interaction, presumably decisive for satisfaction. These core attributes were, however, enhanced by the support agent involvement in one hybrid chatbot (SamBot).

The excelling features are easily noticeable high on the chart. These represent clarity, instantaneity, and learnability. The high confirmation of these features seems to positively enhance sentiments of familiarity, ease of use, and convenience, and substantiating participants' positive impressions. These are possibly a reason behind the participants confirmed intention to use these chatbots in the future for informational purposes: *"General information, without waiting in a line for a receptionist or whatever, you want to get it quick without bothering anyone."* (PC13).

The figure 3 shows also the features that caused the least satisfactory impressions, such as access to back-systems. The low performance of certain chatbot features could explain why participants had a hard time deciding on a clear satisfaction or definite frustration with the chatbot interactions:*"...let's be honest...fifty-fifty because half of the questions were answered, it is hard"*(JL12). This inconsistency could also be the reason why participants' intention to re-use these chatbots for transactional purposes was not confirmed. This is also a sign that the chatbots in question may be suboptimal for direct sales.

It is important to note that this study confirms the importance of specific chatbot features over others in perceiving satisfaction. The functional aspect of performance seems to be more determining for satisfaction than the intrinsic one, as one participant explained: *"First more important is that it gets the job done, and then being social in its talk."* (AR3). Another participant (JA10) confirmed that no one comes in to a chat for fun but to solve an inquiry. Participants tend to establish a hierarchy of attributes effect on satisfaction. Among the features represented in figure 3, the most corroborated on by participants as primordial for satisfaction, is effectiveness of chatbots resolving tasks efficiently: *"Because you think you want something answered quickly, efficiently without any hustle."* (JL12). Instantaneity, clarity and learnability are expected features providing a familiar messaging setting for interactions. While flexibility, use of links, routing, and access to interfaces are supportive to task resolution. This is confirmatory to Wei et al. (2017) conclusion that performance-related attributes have a more dominant role in satisfaction. Confirmatory also to Froehle (2006) findings that task-execution characteristics are more influential for satisfaction. Including a human agent in interactions is most likely to result in optimal satisfaction: *"This one answers quickly, [I am] satisfied. I tell you, these chatbots with a human being supporting is 1000% satisfaction."* (MB9). This is also confirmatory to Jain et al. (2018) preference of the hybrid model.

The intrinsic elements are found to add to the familiar social exchange and strengthen feelings of engagement and comfort. *"I prefer...the exchange, dialogue as if I am talking to someone in front of me. A social relationship is better and important."* (AR3). Embodiment, feelings of control add to the comfort of experience and encourage adoption. The ability to handle specific and personalized intent appears to be central for the

emotional effect of chatbot responses:"…*putting themselves in your shoes and empha-sizing you and your frustration or what you want to do."* (EV2). The result confirms Jain et al. (2018) assertion that chatbot empathetic traits' role in enhancing interaction experience and adding to chatbots' positive evaluation. Feeling of security and trust is also found to be important especially for transactional purposes: *"I need reassurance."* (EV2). Small talk and keeping response sequences human-like-also adds to the smooth-ness of exchange as reiterated *by* PC13*"[I like to] have a little bit of small talk in there...for example "have a beautiful day!."... just small things that you would probably have with a live person.".* These results indicate the importance of natural language un-derstanding and smoothness of the chat for satisfaction. They, also, confirm Wei et al. (2017) finding about intrinsic attributes of enjoyment, engagement and empowerment to be more influential in leading to a memorable experience.

The functional and intrinsic chatbot features were looked at by the participants as a set of interconnected attributes supporting each other to produce satisfactory impressions. For instance, access of support agents to back-systems was found to support efficiency of task resolution: *"A chatbot without interface access is not complete. Either access to background information, and internal data, or to external sources...Google map, or other data like weather forecast...now I see [it] not yet linked."* (EF8). Similarly, hu-man-orientation attribute is decisive for resolution, JL12 could not start booking meet-ing rooms because the chatbot could not recognize her intent when expressed in Finnish language.

5.2.1 Chatbot model and satisfaction

This study reveals that chatbot platform and chatbot model are decisive prerequisites for chatbot success. The extent of human contribution in assisting chatbots has clear effect on satisfaction results. In stand-alone models, human agents do not take part in instant interactions. In this study the Helka Bot and Sveitsi Bot are not human-assisted, and seem to produce a limited level of satisfaction. Users employ keywords to seek answers to common questions, clicking through options and sub-option buttons to get their in-quires resolved: "*So you benefit from what is available within that framework, that is my impression.*" (EF8). These simple chatbot models offered too large and too general in-formation, and are poorly conversational in a question-answer mode. They tend to fall

into multiple errors especially when met with specific intent: *"It was not answering questions, it was pre-programmed."* (OE11). Topbots (2017) commented on this type of model as language programmed to match keywords not to induce meaning out of requests. The stand-alone model offers resolutions only later on other communication means. This, at times, downgraded the chatbots to a mere contact form:*"...just like a contact form... here is the contact form and send an email"* (JL12).

Looking at participants general positive evaluation comments regarding Imatra Kylpylä SamBot, it becomes evident that the hybrid model can yield better satisfaction when supported by an omnipresent agent. Participants found it comforting that a human agent proactively hasted into the chat, suggested help, showed knowledge and understanding. Topbots (2017) defined this model as more efficient since a human is monitoring and giving correct and personalized answers. The result substantiates also the hybrid model preference advocated by Cain et al. (2019) for performance reasons. Users could not hope for any further conversational chat, but satisfaction can be enhanced further by empowering support agents with access to back-systems. Access could have shortened the resolutions times, and helped handle transactional inquiries efficiently too: *"The next step is [to] connect to back-end systems, the chatbot can execute more things and then it still takes more workload from customer service agents."* (EV2).

5.2.2 Functional attributes supporting satisfaction

The functional attributes were presented in figure 3. Here, a deeper analysis of the three most supportive functional attributes, based on the interview data, is presented.

Instantaneity of chatbot response is found to be an important element supportive of chatbot satisfaction, *"... that's what the chats are for. It's like short questions with quick answers."* (PC13). For users, getting an instant answer is acceptable only when the answer fit the context of the inquiry, and bears engagement to solve the task. Instantaneity is more accentuated in relation to the urgency of inquiry, and personality of the user: *"If the user is in hurry, he would leave right away."* (BM9). The participants confirmed that 30 seconds is a good waiting time for an answer but they are ready to wait up to 2 minutes if that would resolve their inquiry: *"I personally prefer a live agent that takes time and answers me correctly more than chatbot one that responds quickly and says he*

doesn't know" (OE11). Therefore, instantaneity counts when it supports effectiveness. The participants found the investigated chatbots totally instant (See Figure 3).

Learnability: Clarity of sequences, neatness and consistency in style regardless of the chosen language enhance the feeling of familiarity, and incite understanding. As much as it is necessary for a chatbot to be clear and easy-to-use, users' *ability* and *role clarity* might have an effect on the level of learnability needed. In this case the participants confirmed that the chatbots were easily visible and easy to dialogue with, which led to positive impressions: *"[the chatbot is]…quite simple and straight forward. I think anybody can use it…and very easy."* (JL12), *"Options structure and sub-options clarity 5/5."* (OE11). Some participants suggested more optimization for instance by a larger chat window or replacing the chat icon higher on the page: *"It is sometimes difficult to see it in the bottom... and we tend to see…and focus on the top."* (MB5).

Routing to human: Escalating to an agent seems to be the secret for the hybrid model success because it offers the familiarity of social exchange and understanding, as usual in a H-H interaction: *"When I asked…'can you add that [comment] to my reservation?'…and it transferred me to the CSA, I was happy."* (EV2), EF8 also explained that the link to the live agent was the peak of satisfaction for her. The study also points out to the capabilities expected of support agents. These are: availability, knowledge, selling skills, politeness, proactive suggestions, relevant, timely response, and access to hotel interfaces. Routing appeared to be the way out for users from the rigidity and misunderstanding of a chatbot, to the flexibility and comfort of a human interaction, a window for participants to perceive value in the chat experience: *"If I talk to a human, I might get a discount, a more suitable room...So, I can have better value and benefit."* (AR3). This attribute is represented low in figure 3. This is because only one out of the four chatbots had this feature, which affected the general evaluation. Still, routing was substantial for satisfaction in all interactions where the feature was present.

5.2.3 Functional attributes not supporting satisfaction

Here a deeper analysis of the least supportive functional attributes (See figure 3), based on the interview data, is presented.

Effectiveness: Task resolution is of a paramount importance for satisfaction with the case study hotel chatbots. However, this attribute scored low (Figure 3). The participants confirmed that effectiveness is the reason behind chatbots' success: *"It comes to the end result: if you get what you wanted or you don't, it makes the difference."* (JL12). Effectiveness is however affected by other elements for its achievement. Knowledge, efficiency, and timely routing to a human agent appear to be prerequisites for chatbots to prove their value, by helping in what users cannot already do by themselves. Effectiveness could also be improved by the chat service connection to hotel back-systems to answer billing and booking questions, which constitutes 40% of all inquiries with hotels (Zhou, 2017). Adequate use of internal and external links also helps in tasks completion.

Efficiency stands out as important for the quality of a service from a customer point of view, and cost saving from a business point of view. It is also highly connected to effectiveness. If a customer is unable to reach result, it becomes redundant talking about efficient resolutions. The studied chatbots were able to secure a level of efficiency in inquiries with common informational intent:*"...for those questions on which you get an easy ready answer, the efforts are less than the result."* (EF8). However, these chatbots were not constantly efficient, and raised frustration: *"[I got] just one [the same] answer: 'Leave us your email, and we will contact you later', if that's the case... what is this chatbot for in the first place."* (YZ4). This study showed that, efficiency could have been enhanced by clever routing instructions, and supported by agents' access to hotels back-systems when chatbots are unable to make bookings. Also, adequate human-oriented perception could have allowed more relevant responses, saving customers time and efforts to make intent clear at the first try.

Knowledge is an important supportive feature for effectiveness. It enhances impressions that the solution can be trusted. Knowledge was tested with users' specific inquiries: *"I asked specifically the square meters figure and not just 'big'."* (AR3). Detecting correct intent was important for offering relevant information and efficient resolution. Knowledge could have been reinforced, once more, by access to hotel back-systems: "*[Agents] do not have information about when they will have discounts in the summer, which period, and so on*." (EF8). More secure supportive links could also be an extension to the knowledge attribute.

Access to back-system The participants in this study spotted the disconnection of bots and agents from the hotels' interfaces. All viewed access as a substantial feature if the chatbot is to diminish front-line employees' workload, and efficiently offer first-contact resolution. Access is considered important by participants for ultimate usability satisfaction, and FIUTP: *"If they don't have access to the system...I would question the value of the chat"* (EV2). Access to interfaces could have been possible in connection with routing to simplify transactions, offer discounts, handle complaints, and perform direct bookings: *"The agent should have flexibility to conclude sales and offer discounts instead of referring to contacting sales."* (YZ4*). Access, however, raised few security considerations related to handling data, especially if the chat service is outsourced. Still, if full access was not an option, then a partial access to some hotel functions could have boosted satisfaction.

Robustness and the ability of a chatbot to spot and allow users to correct mistakes, and verify intent does not seem to have any clear effect on functional satisfaction, mostly because of the participants' *Ability* attribute to take on this type of interaction. Chat logs hinted to a relevant use of keywords and no major typing mistakes. Nevertheless, chatbots generated a lot of error messages without hinting to specific user mistakes. The participants noted that the chatbot could not detect mistakes and allow fixing them. It was unable to understand even grammatically and semantically correct sentences: *"Even a correct sentence, it could not understand it, so what would be the reaction if there were mistakes?."* (OE11). The multiple-choice design, however, seems to add to robustness as interactions proceeded by button selection, as opposed to Q&A form.

Flexibility: The studied chatbots could not satisfyingly understand and resolve some common inquiries even when users put it in different forms. They gave indications that the bots could not understand informal language, or deviating sequences: *"I changed the question in a different way… and it did not answer me."* (OA6). Low flexibility level affected understanding and consequently task-resolution, "*if I had more flexibility to ask my question in natural language, I would have made my intent clear."* (OE11). Notwithstanding, the participants considered it generally positive that chatbots showed flexibility offering alternative options to resolve inquiries such as calling or leaving a message. There was however, clear convergence on the fact that being asked to leave a message without a clear indication about exactly the time lapse they had to wait was a cause of

34

frustration: "*Only if I really needed exactly that hotel that I would contact them to ask more, otherwise I would just move on to the next hotel.*" (BM9).

Utility: The use of links to support task resolution was behind the one and only confirmation of future intention to used for transactional purposes, as JA10 was linked timely to a reliable hotel booking page. Apart from this instance, the investigated chatbot felt short of suggesting parking information link to OA6. EF8 was also expecting the chatbot to link to external map applications to offer direction on how to drive to the hotel: "*I expected at least that it suggest to me a map".* On the other hand, interactions which were routed to a human agent took use of supportive links to hotel products and services. Although more imagery would have been appreciated. Links could cover for chatbots shortage in knowledge, but it necessitates a correct intent detection in order to offer only relevant and secure links.

5.2.4 Intrinsic features supporting satisfaction

Here a deeper analysis of the most supportive intrinsic attribute (see figure 3), based on the interview data, is presented.

Embodiment: "*I liked it…both the language and also the form of the chatbot [were] nice… and it gives clear indication that it is a chatbot not a human.*" (OA6). Important to note that a human-like personality is much more likely to yield better intrinsic evaluation. Users tend to perceive an engaging personality in different ways but one thing is sure, polite and friendly sequences, welcoming and thanking messages are expected from an engaging chatbot, or a skillful live agent. Hotels might have to segment their online users and look deep into their expectations: leisure, business, local, international, age, and cultural aspects. Such segmentation might suggest better choice of words, small talk, sequences, and offer personalized responses, as EF8 stated: "*Only end users can have the final say, no matter how good the engineers are.".* The evaluation of embodiment in this study was heavily influenced by chatbot introducing itself as brand new, and at a learning stage. Pleading for sympathy made it more human-like, allowed error-tolerance, lowered expectation, and helped regulate the way participants interacted with the chatbots. Jain et al. (2018) endorsed this clarity on chatbot limitation to avoid later disappointment.

5.2.5 Intrinsic features not supporting satisfaction

Here a deeper analysis of the non- supportive intrinsic attribute (see figure 3), based on the interview data, is presented.

Control and empowerment: Personalization in an online chat happens by responding to users' specific needs and resources, and allowing customers to control interactions. The participants in this study wanted to feel being listened to, and not being pushed to accept rigid solutions. Control over the interaction appeared when users took their time to ask questions, asked for discounts and were met with careful listening and friendly attitude. They also wanted to decide when to transfer to a human, and to be able to use small talk. The participants felt some degree of control in interactions with stand-alone chatbots, when they were given the possibility to choose from topic buttons. Still, personalization went missing when the chatbot responded generically: *"...you get replicated replies, so...you don't have freedom."* (MB5). However, participants specified that feelings of control rose significantly when routed to a human agent. PC13 was able to personalize his gluten free meal through a live agent *"She responded with…'As soon as it opens we will definitely take all dietary restrictions into account'...but that's how you see [personalization is possible] with a [live] person."*.

Emotions: In this study, positive emotions were clear experiencing features such as learnability and embodiment, while most negative sentiments were about the pitfalls in efficiency, effectiveness, and security. Intense emotions were related to the chatbots' ability to understand and establish a meaningful connection, or bringing forward human attributes, like appealing for users' sympathy by asking forgiveness for "being a brand new chatbot", or for sequences like "we love pets". On the other hand, repeated errors failure to understand, and the inability to resolve quickly created fierce feelings of uselessness. The study took note of participants' signs of anger through their body language and through comments such as "super annoyed", "piss me off", "are you joking", "incomplete", "I could do it myself", "what is this for in the first place". These were to display users deception at chatbots' low understanding level, inability to solve some basic tasks like hotel address, answer small talk, and the inability to transfer timely to a live agent when the task is more specific than what a basic chatbot can handle.

Human-orientation: Chatbot learning and training to find out users correct intents is not an easy task, especially when users communicate their needs in different ways, either in clear keywords or insinuated. Users' ability and role clarity contribute to using correct word forms and keywords to avoid error responses. Nevertheless, chatbot human-orientation, flexibility, and learning from past interactions should make it possible to induce the correct intent. In this study, inadequate responses because of low human-orientation level led to negative emotions, and also to ineffectiveness: *"They are not listening to me, they are not following the goal of my chatting. They are not fulfilling my need."* (JA10). PC13 also experienced similar misunderstanding: "*I was asking what rooms would suit me, and I got the answer that 'You can go from you room to the sauna and things'."* (PC13). Other participants expressed deception as chatbots could not respond to their small talk as expected in a social exchange: *"There is a language barrier…'you are most welcome'...just say 'ok', thank you!'."* (JL12). The chatbots' low human-orientation perception (Figure 3) suggests that more training and feeding are needed to reach satisfactory ratio between users' efforts to make themselves clear and relevant responses. Until then, a live agent in a hybrid solution is the key.

Security feeling: The participants raised questions related to authentication, recognition of loyal guests, security certificates, and data protection. A general feeling of doubt among the participants because of the immaturity of the chatbots. The participants showed a tendency to feel secure when comforted with security certificates and secure supportive links. *"I would prefer to...see actually the lock sign to know that [I am] actually in a protected view"* (PC13). The relevance of responses seem also to enhance security feelings, as OA6 explained: *"Security and trust comes from the way you get the response instantly…The capability of giving adequate answers levels up the trust and security even if is a chatbot".* The business context at the destination could also favorably affect security feelings, as explained by BM9, but not to the extent of feeling fine about giving his credit card. Compliance with cyber security standards is, thus, expected in hotel chatbots, as advised by Schatsky and Gratzke (2016).

Maintaining dialogue and "ending gracefully": The expression is borrowed from Jain et al. (2018) to account for instances of a dialogue coming to a sudden halt. Maintaining a dialogue exhibits chatbot intelligence in keeping users interested by showing understanding of their specific needs and helpfulness to resolve them. This could be done by

taking full use of links, imagery, alluring sequences to keep users interest up, within the limits of efficiency and politeness. The study showed that missing on this attribute leaves a gap in the interaction and cause a loss of interest:"… *[the agent is] not capable…especially to convince me, keep me interested, and sell to me, or even to make sure I would get to contact them later…that is what I felt*." (AR3). Ending the chat session should also be carefully planned to emphasize re-welcoming and thanking sequences for using the channel. The interaction closure should also be used to promote hotel loyalty programs and inform on direct booking benefits: "*I think it could give you either a question like do you want to have promotions, or if you are interested in any of that."* (JL12).

Selling skills is supported by intent understanding, keeping within context, and by the agent's proactive and helpful personality: "*Expertise in sales or probably a matter of personality."* (AR3). Participants expressed that it is for the chatbot to convince them of direct bookings, by showing knowledge, efficiency, informing on best rate guarantees, and offering discounts for retention: "*I ask about the room [discount], they told me: 'we have 10%, use this code in our webpage'… That is a good way to encourage people to use the service*." (JA10). Participants also want to keep the right to negotiate rates through chatbots.

Co-experience, in the study, was viewed in terms of the participants' intention to use the four chatbots in the future for informational and transactional ends. This study showed a tendency to embrace chatbots to seek information and find out personalized offers, but a reluctance to buy through chatbots while performance is not optimal: *"Yes I would go for it to get answers in the future...but to book personally no."* (AR3). Users tend to be willing to spend time and efforts to converse with hotel chatbots; but when it comes to spending money, they demand optimal performance of the core competences such as efficiency, effectiveness, human-orientation, and security.

6. CONCLUSIONS AND RECOMMANDATIONS

This study found a varying level of satisfaction with the four hotel chatbots. Users were not impressed by the chatbots' performance as to entice their trust, or to use it again for transactional purposes. Hybrid chatbot models tend to secure a more familiar social exchange and better satisfaction, due to the involvement of a live human agent. Functional

features (especially effectiveness, knowledge and efficiency) of the bots are particularly determinant for end-user satisfaction. Functional performance boosts also emotional satisfaction, while intrinsic features (especially human-orientation, embodiment, empowerment, and feeling of security) are helping in resolution and in building a connection with the users. Satisfaction with hotel chatbots is important for perceptions of usefulness and for future adoption. The studied chatbots were also found useful for common and less urgent inquiries, but less useful for more specific inquiries. Chatbot routing to human agents seems to be the most important attribute for satisfaction with hotel chatbots, especially, if these agents have instant access to hotel back-systems, and power to confirm preferences and conclude deals.

6.1 Managerial recommendations

6.1.1 Managerial Implications

First, hotel marketers need to conduct analysis on the real need for VA deployment, and the level of virtual agent technology necessary to solve defined customer service issues. Choosing an adequate platform with a hybrid model, and acceptable NLP level enables chatbots to perform more reliably. Optimal functional effectiveness should be the urgent solution to opt for, while advanced real-time emotional analysis capabilities should be the ultimate solution to hope for. For the time being, activities such as enlarging chatbot-feeding sources and managing them for conversational purposes remain mandatory. Two main functional capabilities worth considering, to achieve satisfactory utilitarian and emotional results, are: 1- consistent routing rules to ensure an omnipresent live agent response, and 2- extending the chat service reach to transactional purposes through a secure access to back-end systems.

Second, hotel managers need to look at the big picture encompassing satisfaction with chatbots, as well as to work together with chatbot developers to tune specific features to yield acceptance and satisfaction. The figure in appendix 4 represents those contextual dimensions, and users' personal driving forces possibly affecting expectations at each chatbot inquiry. The figure also details, out of this study, the expected combination of

39

attributes at different inquiry types to achieve satisfactory results and enhancing beneficial adoption and loyalty.

6.1.2 Technical recommendations

Based on the results of this study, and focusing on instances of dissatisfaction, the following technical recommendations to chatbot monitors can be made:

- Enlarge chatbot information and data sources, and extend supportive links.
- Larger topic selection with specific branches to match larger scope of intent.
- Equip chatbots with client authentication processes, and security certificates.
- Optimize chat box placement on website.
- Rework conversational sequences to be warmer, more welcoming and more selling. Manifold formality language levels, clear spelling mistakes, end dialogues gracefully, show appreciation, and entice use in the future.
- The chatbot should offer control to users to select the form of interaction, be it multiple options, question and answer or something else.
- Improve consistency of response throughout inquiry type, language chosen and up to the level of service generally claimed at the hotel.
- Upgrade the natural language processing level, and connect to back-systems to support first-contact resolution, and better user experience.
- Users should be allowed to suggest improvements.
- Learn from hotel receptionists and hotel sales persons behaviors in different situations in order to be able to train chatbots replicate acceptable response.

6.2   Limitations and future research

Specific limitation in this study is related to the Covid-19 crisis, having clearly affected one of the chatbots' interactions, as it was temporarily deprived of live agent support. The participants, however, were able to account for that limitation in their evaluations, and the analysis chose not to judge that chatbot performance any further than what could be expected from an unsupported chatbot. The Covid-19 crisis affected also the interviews. Face-to-face were substituted by video meetings because of social distancing requirements.

The study is specifically concerned about satisfaction with four specific chatbots. More research could be done on different hotel chatbots, and other types of self-service tech-

nology. Understanding satisfaction with self-service technology could be also longitudinal, considering the evolving nature of technology, the changing consumption patterns, and the changing periodical hospitality aspirations and resources. The same hotel chatbots could be studied over a lapse of time, testing different configurations in relation to specific guest segments, or for specific interaction purposes, and exploiting both qualitative and quantitative methods.

REFERENCES

Accenture, 2019. The Customer Service Model of the Future | Accenture [WWW Document]. URL https://www.accenture.com/us-en/insights/technology/customer-service-management (accessed 15.12.19)

Barley, S.R., 2006. When I write my masterpiece: Thoughts on what makes a paper interesting. Acad. Manage. J. 16–20.

Boost.ai, 2020. Conversational AI Trends in Customer Service: 2020 and beyond. Available from: https://static1.squarespace.com/static/5c73f03e65019f38b4ba0ebe/t/5e1614315b49fc37c36f1b44/1578505273014/Customer-service-trends-2020.pdf. (accessed 19.02.2020)

Botanalytics, 2019. The Complete Guide to Boosting Brand Loyalty with Chatbots. Bot. Blog - Conversational Anal. Bots. URL https://botanalytics.co/blog/2019/04/23/boosting-brand-loyalty-chatbots/ (accessed 12.27.19)

Bradbury, Rurik, 2017. DocSend - Simple, intelligent, modern content sending [WWW Document]. DocSend. URL https://docsend.com/view/826nkc4. (accessed 12.19.19).

Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3, 77–101. https://doi.org/10.1191/1478088706qp063oa

Bryman, A., Bell, E., 2015. Business Research Methods. Oxford University Press.

Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., Hofacker, C., 2019. Technological disruptions in services: lessons from tourism and hospitality. J. Serv. Manag. 30, 484–506. https://doi.org/10.1108/JOSM-12-2018-0398

Cain, L.,Thomas, J.and Alonso Jr, M.2019, "From sci-fi to Sci-fact: the State of Robotics and AI in the Hospitality Industry", Journal of Hospitality and Tourism Technology, Vol. 10 No. 4, pp. 624-650. https://doi.org/10.1108/JHTT-07-2018-0066

De Keyser, A., Köcher, S., Alkire (née Nasr), L., Verbeeck, C., Kandampully, J., 2019. Frontline Service Technology infusion: conceptual archetypes and future research directions. J. Serv. Manag. 30, 156–183. https://doi.org/10.1108/JOSM-03-2018-0082

Debecker, Alex, 2019. How to Craft a Chatbot Personality (Without Damaging its Performance) [WWW Document]. URL https://blog.ubisend.com/discover-chatbots/chatbot-personality (accessed 11.15.19).

Denisselle, G., 2016. Les stores et les apps vous cassent les pieds alors vive les chatbots ! - TendanceHotellerie [WWW Document]. URL https://www.tendancehotellerie.fr/articles-breves/technologie/5955-article/les-stores-et-les-apps-vous-cassent-les-pieds-alors-vive-les-chatbots?debut_articles_rubrique=32 (accessed 10.12.2019).

Dixon, M., Ponomareff, L., Turner, S., DeLisi, R., 2017. Kick-Ass Customer Service. Harv. Bus. Rev.Jan-Feb 2017 Issue. Available from: https://hbr.org/2017/01/kick-ass-customer-service. (accessed 23.02.2020)

Froehle, C.M., 2006. Service Personnel, Technology, and Their Interaction in Influencing Customer Satisfaction*. Decis. Sci. 37, 5–38. https://doi.org/10.1111/j.1540-5414.2006.00108.

Ivanov, S., & Webster, C. 2017. Adoption of robots, artificial intelligence and service automation by travel, tourism and hospitality companies – a cost-benefit analysis. International Scientific Conference "Contemporary tourism – traditions and innovations", 19- 21 October 2017, Sofia University

Jain, M., Kumar, P., Kota, R., Patel, S.N., 2018. Evaluating and Informing the Design of Chatbots, in: Proceedings of the 2018 on Designing Interactive Systems Conference 2018 - DIS '18. Presented at the the 2018, ACM Press, Hong Kong, China, pp. 895–906. https://doi.org/10.1145/3196709.3196735

Market and Market Research Private Ltd, 2019. Chatbot Market by Component (Solutions and Services), Usage (Websites and Contact Centers), Technology, Deployment Model, Application (Customer Support and Personal Assistant), Organization Size, Vertical, and Region - Global Forecast to 2024 [WWW Document]. URL https://www.marketresearch.com/MarketsandMarkets-v3719/Chatbot-Component-Solutions-Services-Usage-12771978/ (accessed 12.26.19).

Miessner, S. 2019. Starting up Smoothly-Experiment Evaluation. Available from: https://migri.fi/documents/5202425/0/Starting+up+Smoothly+experiment+evalu ation_CMYK.PDF/87688320-dfef-9246-6c24-c1ac8e436103/Starting+up+Smoothly+experiment+evaluation_CMYK.pdf. (accessed 21.02.2020).

Ollion, C., 2018. Comprendre les habitudes des consommateurs grâce à l'intelligence artificielle. Enjeux Numèriques, N 1- Mars 2018. Annales des Mines.

Patel, N., 2017.How to Get 88% Open Rates and 56% CTRs Using Facebook Messenger. [WWW Document], URL https://neilpatel.com/blog/open-rates-facebook-messenger/ (accessed 12.30.19).

Prebensen, N.K., Rosengren, S., 2016. Experience value as a function of hedonic and utilitarian dominant services. Int. J. Contemp. Hosp. Manag. 28, 113–135. https://doi.org/10.1108/IJCHM-02-2014-0073

Sarmah, B. and Rahman, Z. (2018), "Customer co-creation in hotel service innovation: An interpretive structural modeling and MICMAC analysis approach", Benchmarking: An International Journal, Vol. 25 No. 1, pp. 297-318.

Schatsky, D., Gratzke, P., 2016. The conversational enterprise-How chatbots Can Answer Questions For Both Customers and Employees. Signals for Strategists. Tech. rep., Deloitte. University Press [WWW Document]. URL https://www2.deloitte.com/content/dam/insights/us/articles/3453_Signals_chatb ots/DUP_signals-for-strategists_chatbots.pdf.

Srinivasan, K., Nguyen, C., Tanguturi, P. 2018.Chatbots are here to stay: so what are you waiting for? Accenture Digital. Available from: .https://www.accenture.com/_acnmedia/pdf-77/accenture-research-conversational-ai-platforms.pdf (accessed 20.02.2020)

Steven Van Belleghem, 2013. The Self Service Economy. Available from: https://www.stevenvanbelleghem.com/blog/new-report-the-self-service-economy/. (accessed 10.02.2020)

Tong, A., Sainsbury, P., Craig, J., 2007. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int. J. Qual. Health Care 19, 349–357. https://doi.org/10.1093/intqhc/mzm042

Topbots, 2017. Customer Experience Automation- How to cut costs & grow business with machine intelligence. [WWW Document]. URL

https://www.Topbots.com/downloads/books/cxautomation/TOPBOTS_Customer_Experience_Service_Automation_V1_07102017.pdf (accessed 16.12.2019).

Tung Vincent Wing Sun, Au Norman, 2018. Exploring customer experiences with robotics in hospitality. Int. J. Contemp. Hosp. Manag. 30, 2680–2697. https://doi.org/10.1108/IJCHM-06-2017-0322.

Ubisend, 2017 Chatbot Survey Available from: https://www.ubisend.com/white-papers/ubisend_chatbot_survey_2017.pdf. (accessed 12.12.2019)

Ubisend, 2019. Chatbot Statistics Cheatsheet.pdf. Available from: https://www.ubisend.com/white-papers/ubisend_chatbot_statistics_cheatsheet.pdf (accessed 10.02.2020).

Ubisend Webinar, 2020 - Why Chatbots are Customer Self-Service's Logical Next Step, [Webinar attended 21.01.2020]. Available also from: https://www.youtube.com/watch?v=XGOYZKzjApU

Ukpabi, D.C., Aslam, B., Karjaluoto, H., 2019. Chatbot Adoption in Tourism Services: A Conceptual Exploration, in: Ivanov, S., Webster, C. (Eds.), Robots, Artificial Intelligence, and Service Automation in Travel, Tourism and Hospitality. Emerald Publishing Limited, pp. 105–121. https://doi.org/10.1108/978-1-78756-687-320191006

Wei, W., Torres, E.N., Hua, N., 2017. The power of self-service technologies in creating transcendent service experiences: The paradox of extrinsic attributes. Int. J. Contemp. Hosp. Manag. 29, 1599–1618. https://doi.org/10.1108/IJCHM-01-2016-0029

Weiss, A., Bernhaupt, R., Lankes, M., Tscheligi, M., 2009. "The USUS Evaluation Framework for Human-Robot Interaction", AISB2009: Proceeding of the Symposium on New Frontiers in Human-Robot Interaction, Vol.4, app. 817-839.

Zendesk, 2020. Searching for self-Service. Available from: https://www.zendesk.com/resources/searching-for-self-service/. (accessed 20.02.2020).

Zhou, Adelyn, 2017. Success Secrets of Customer Service Bots | TOPBOTS [WWW Document]. URL https://www.Topbots.com/success-secrets-customer-service-bots/ (accessed 20.12.19).

APPENDICES

Appendix 1: Semi-structured Interview Guideline:

Reminder of anonymity / voice recording permission/ transcripts

- Background info on the interview context, the utility of chatbot in customer service as deduced from the theory part, and focus on satisfaction with self-service technology as the purpose of this interview
- Choice of one hotel chatbot or combination of Hotel way bots/-Email use
- What was the task /enquiry you tried to solve.? (inquiry type informative transactional.)

Set 1: participants

- Participants info/demographic/ readiness/ experience with SST/ frequency of travel/ impression on the interview./ role clarity/ willingness to participate in this innovative service -what do u usually interact with a hotel staff for? have you used hotel chat services?

Set 2 questions?? User experience

- Impressions on chatbot look, personality, human-like, empathy, small-talk, courtesy , welcoming impression, colors, does it suggest help, too formal, feeling that chatbot is a crew member, ? any match with the brand that you could spot?
- Feeling of security, empowerment during the chat, ?
- Was the chatbot engaging emotionally, was it good enough at maintaining discussion ?
- Did u feel control over the discussion or rather lead through .., ?
- Did u like the interaction as a whole? any ways the intrinsic part could have been done differently?
- Did you feel you wanted to quit the chat at any time?
- Were you wished goodbye gracefully upon leaving?
- Would you consider a user relationship with the chatbot?, would get back to use it again or recommend it?
- From 1 to 5 how would you rate your satisfaction with this part of this set of features?

Set3 questions: Functional attributes

- Were you able to get the info, inquiry , transaction done? effectively
- Were you prompted the help right away, did it take time to get the purpose done? efficiency.. did you have to make much effort for a simple task?
- Was the assistant clear, directions? easy to use? multiple choice buttons, pre-suggestions u can click? flexible, different ways to answer the inquiry? was your role clear to you
- Were you routed to a live person? why? was it quick, purposeful? what is your reaction, impression
- Did you make any mistakes in the chat? how the chatbot reacted? (robustness)
- were you routed to a live chat agent? why you think so? did it lose much of your time? did you have a prompt answer? (routing rules)

- do you think the chatbot was useful to achieve the purpose? or clumsy, did not make good functional impressions? could you rely on it for attaining fruitful interactions? How do you compare it with other communication means email, phone?
- Are you satisfied with the interaction? can you explain how and why? any risk of churn?
- From 1 to 5 how would you rate your satisfaction with this part of this set of features?

Conclusion:

- Any interesting features about the chatbot? about the hotel website, impressions about the interaction
- What do you think could go wrong in such interaction? What could undermine your satisfaction or comfort using such technology?
- Trust in this type of technology in hospitality. What other features according to you could have made the interaction more positive and leaving better impression on you?

Here is a figure showing the determinants of satisfaction with chatbots deduced from theory
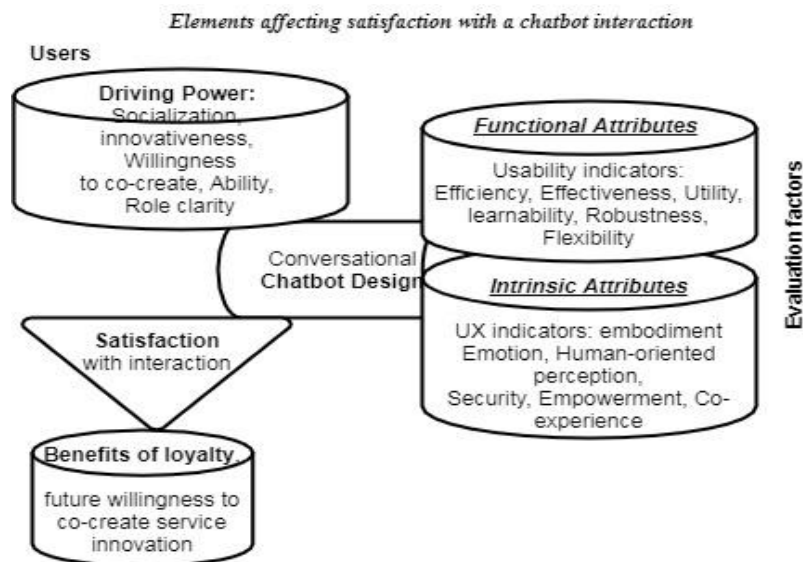
Figure 1: Model of chatbot dimensions impacting satisfaction induced from combined prior literature (Sarmah and Rahman., 2018; Wei et al., 2017; Weiss et al., 2009)

Book your convenient interview time by watsaping me and confirming the booked Zoom video meeting. You can choose to interact with one or more of the bots on the following hotel pages: https://www.hotelhelka.com/, https://www.hotelsveitsi.fi/en/, https://www.imatrankylpyla.fi/en, https://www.klauskhotel.com/en/

Appendix 2. Summarized participants' excerpts on the expected hotel chatbot features

SP1	A hotel chatbot should be knowledgeable, should simplify customer experience by independently answering inquiries, and assisting in direct booking.
EV2	Simplify booking by doing them independently of links, and deal with special requests which cannot be done easily otherwise.
AR3	Simplify decision-making, entice to use services by having knowledge, selling skills, and offering discounts.
YZ4	Chatbot should help at least in simple tasks, should be secure and effective independently of other comm. means.
MB5	A hotel chatbot should offer guidance, show proof of understanding, and allow users' freedom and control on interaction.
OA6	A hotel chatbot should be able to answer common questions at least, be self-sufficient, work in tandem with a human to deliver results.
YB7	Satisfaction is the outcome of a chatbot that gives complete answers, exceeds to give service suggestions, and implies live agent support. Balancing performance and user comfort.
EF8	Chatbot should be consistently effective, respond with relevant content, use links and deliver clear value. A human agent, a self-sufficient model, and access to interfaces are necessary for satisfaction.
MB9	Convenience, ease, time-saving, and knowledge give chatbot reason to be. A chatbot has to introduce the concept, and its limitations for user to adjust expectations and usage. A hotel chatbot has to be supported by human for perfect interaction.
JA10	A hotel chatbot should give the impression that it listens to the customer, and keeps dialogue within topic context. It should use secure links if it helps in completing tasks. A human-like or human assisted model is purposeful.
OE11	A chatbot should have a satisfactory NLU level to respond correctly, it should empower users to control, engage, route to human when in need, and have access to back systems to resolve quickly.
JL12	Easy, effective, efficient, friendly response that exceeds what user can find on his/her own. Questions should be answered stress-free, no hustle, and in Finnish language too.
PC13	A hotel chatbot should be a conversational , personalized exchange focusing on resolving customer's inquiries instantly, independently, and in a friendly, free flowing, inviting manner, and in Swedish too

Appendix 3 : Participants' detailed evaluation of attributes.

Partic	Usability / functional aspect							additional participants' features				General Eval.	Fun
	effective	Instantaneit	robustness	flexible unde	supportiv	usefuln	Learnab	Access	routing	knowled	efficienc		
SP1	FALSE	TRUE	NC	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE		2/5
ET2	FALSE*	TRUE	NC	FALSE	TRUE	FALSE	TRUE	FALSE	FALSE*	FALSE*	FALSE		1/5
AR3	FALSE	TRUE	TRUE	FALSE	TRUE	FALSE	TRUE	FALSE	TRUE	FALSE	FALSE		3/5
YZ4	FALSE	TRUE	FALSE	TRUE	NC	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE		1/5
MB5	TRUE	TRUE	NC	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE		4/5
OA6	FALSE	TRUE	FALSE	FALSE	NC	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE		2/5
YB7	TRUE	TRUE	NC	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	TRUE		4/5
EF8	FALSE*	TRUE	NC	TRUE	FALSE*	FALSE	TRUE	FALSE	FALSE*	FALSE*	TRUE		4/5
MB9	TRUE	TRUE	FALSE	FALSE*	NC	TRUE	TRUE	FALSE	FALSE*	TRUE	TRUE		3/5
JA10	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	TRUE		4/5
OE11	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE		1/5
JL12	FALSE	TRUE	FALSE	FALSE	TRUE	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE		3/5
PC13	FALSE	TRUE	FALSE	FALSE*	TRUE	FALSE*	TRUE	FALSE	FALSE*	FALSE*	FALSE*		2/5
SAT	31 %	100 %	13 %	38 %	70 %	31 %	100 %	0 %	15 %	31 %	38 %	42,5 %	
Human	46 %	100 %	13 %	54 %	80 %	38 %	100 %	0 %	38 %	54 %	46 %	52 %	hybrid

*NC: not checked; UN: undecided fifty-fifty feeling; True: Acknowledge attribute Satisfactory; False: unsatisfactory, *: except LiveA involved*

Evalation: lickert scale: 1 completely dissatisfied; 2: not satisfied; 3: some what satisfied; 4:satisfied; 5: very satisfied

Partic	intrinsic / user experience							additional participants' features			General Intr.Eva	
	Clear, ea	emotion/enj	human-orie	control	security/t	selling	Maintai	co-expe	WRInfPur	WRTransP		
SP1	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	NC	FALSE	TRUE	FALSE		2/5
ET2	TRUE	FALSE*	FALSE*	FALSE*	FALSE*	False*	FALSE*	FALSE*	TRUE	FALSE*	3/5agent	1/5
AR3	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE		3/5
YZ4	TRUE	TRUE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE	FALSE		3/5
MB5	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	TRUE	FALSE		3/5
OA6	TRUE	TRUE	FALSE	FALSE	FALSE	NC	TRUE	TRUE	TRUE	FALSE		2/5
YB7	TRUE	TRUE	TRUE	TRUE	TRUE	NC	TRUE	TRUE	TRUE	FALSE*		4/5
EF8	TRUE	TRUE	FALSE*	TRUE	TRUE	NC	TRUE	TRUE	TRUE	FALSE*		4/5
MB9	TRUE	TRUE	TRUE	TRUE	FALSE*	FALSE*	TRUE	TRUE	TRUE	FALSE*		3/5
JA10	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	3/5kk	1
OE11	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE		3/5
JL12	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE		2/5
PC13	TRUE	FALSE*	FALSE*	TRUE	FALSE*	FALSE	FALSE*	TRUE	TRUE	FALSE	3/5agent	1/5
SAT	100 %	69 %	38 %	54 %	31 %	10 %	50 %	62 %	92 %	8 %		
human	100 %	85 %	62 %	62 %	54 %	30 %	67 %	69 %	92 %	38 %	65,5 %	hybrid model

Calculation of percentages:

Each participant evaluated each functional or intrinsic feature, resulting in a total of 13 Participants*11Func.att=143 functional feature evaluation, and a 13 Participants*10 Intr. attr.=130 intrinsic feature evaluation. Evaluation values for each attribute can be either True (feature satisfactory), False (feature not satisfactory), False* (Not satisfactory unlessa agent is involved), and NC (neutral). The total "True" impression about each attribute were divided by the number of confirmed evaluations to get a percentage of satisfaction with each feature. T/(T+F+F*) to get a percentage of satisfaction with an attribute regardless of human intervention; T+F*/(F+F+F*) to get a percentage of satisfaction with attribute in a hybrid model where agent intervened.

Appendix 4: Contextual dimension and chatbot attributes interplay

Contextual understanding of an interaction dimensions behind satisfaction with a hotel chatbot

Business considerations affecting Chatbot's service model

Accommodation provider
Deployment objectives
Segmentation/target groups
Customer service level
Awareness of chatbots benefits

Chatbot Provider
Platform
Design abilities, training, develop
Customer-base knowledge &
Hospitality service requirements
Cohesion with hotel
aspirations

Personal & contextual dimensions affecting users expectations

Accessibility to chatbot, Convenience

Past experience with chatbots in general & with hotel (new/loyal)

Chatbots' level available at destination

Immediate purpose of chat. Urgency of making a decision

User personality tolerance for errors & curiosity, Cultural aspect

User ability & role clarity, Approach

Hospitality Chat service Model
Text-based interaction, level of NLP
Design, personality & Model
Utilitarian attributes, Intrinsic attributes
Support agent

Interaction with hotel chatbot

✔**Satisfaction:**
Optimal usability,
Best user experience

🔄 *Loyalty*
Intention to co-experience,
More conversion,
Cost-saving
Lower FLE work-load

Expected chatbot attributes in relation to purpose of chat & inquiry type

		Common/routine	🔑 Specific	Ⓥ Urgency
Standalone Model	ⓘ Information	Convenience,speed, effectiveness, Multiple options, links, rich media, clarity, embodi -iment, complete answer robust, flexible,	Knowledge, routing to human, efficiency, simplifying, proactive, suggestive, friendliness Flexible, Control	Instantaniety, effectiveness, Knowledge
Hybrid model needed to guarantee satisfaction	Transaction	knowledge, security, access to hotel systems, easy useful links, clarity, live agent	Instant routing, knowledge, efficiency, effectiveness, control, personalization, security, Authentification, access to back-systems, ability to close deals, up-selling, discounts, selling skills, polite inviting language	Instant, quick Resolution time & confirmations, effectiveness, feeling of security, direct booking, no links , smooth
	Feedback	Recognition, empathy, Thanking, learning, reporting	Authentification, recognition, Instant routing Empathy, Access, Recovery, Discount offering, Personalization instant resolution	Quick resolution, empathy,Ability to recover right away due to full access and connection to interfaces

A chatbot with the best fusion of intrinsic and functional attributes tuned for interaction type and to users immediate and long-term needs can yield best performance metrics: task-completion, least churn rand failures rates, first contact resolution, mean time resolution, and future use intention.