

Personalized Mobile Engagement in Global Hospitality: A Unified Framework for Guest Communication Compliance

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ABSTRACT: The proposed research includes the unified model of personalized m-engagement in the international hospitality industry with the significant need of the regulatory compliance with the GDPR and TCPA. The major hotel chain managed to launch the time and individually personalized messages due to introducing automated compliance into the systems of SMS communication in more than 30 applications related to the enterprises. The model illustrates that smart technologies, intelligent permissions to access, and situational awareness would align the effectiveness of marketing with the requirements of data privacy. Results show quantitative change of engagements, conversion, and efficiency. The article provides the scalable software solution to modern hospitality IT infrastructure which strives to meet a compromise between personalization and regulatory responsibility.

KEYWORDS: Personalization, Personalization, Hospital, Compliance, Guest Communication, Mobile engagement, Guest Communication

I. INTRODUCTION

Personalization of the guests in the hospitality industry has become a strategic issue in the new data-driven hospitality landscape. The need to meet specific guest demands through concrete experience has led to the use of mobile technologies by global hotel chains in order to foster, broadly, guest satisfaction, loyalty, and earning.

Nevertheless, this drive to hyper-personalization is going to encounter regulatory challenges including the laws on privacy like GDPR and TCPA. With mobile communications reaching further and further, hospitality brands have to secure their adherence without losing the connection with customers. The present paper proposes a mobile messaging framework compatible with compliant guest communication that will support a wide range of lifecycle stages. Integrating personalization and the regulatory rigor, we introduce a practical framework of the next-gen engagement systems of a hospitality company.

II. RELATED WORKS

Personalized Engagement

The hospitality industry has gone through a radical change based on the rising application of mobile and digital platforms of guest engagement. Personal mobile engagements have become a competitive imperative that hospitality brands require in order to enhance their guest experiences and stay ahead of others in the competitive landscape dominated by digitalization.

The use of mobile apps and data/recommender systems/Artificial intelligence (AI) tools has helped brands to provide personalized processes to customers in the various stages of the guest journey, reservation, pre-stay, in-stay, and post-stay, and meet compliance requirements on data protection laws in the region.

The increasing popularity of mobile apps labeled with hotel brands also enables an enhanced interaction between the guest and the hotel, which is critical in the provision of hyper-personalized services [3]. These apps use behavioral and transactional data in the robust and dynamic communication and customization that occurs in real-time.

But the kind of personalisation involved in these channels is very much dependent on the ability of the guest to share his personal information where intricate issues of privacy abound. On the same note, 5G and mobile communication technologies also allow maximum bandwidth and minimum latency to increase mobile engagement capabilities [6].

Recommender systems and large language models (LLMs) such as ChatGPT are also AI technologies that have taken the ability of hospitality companies to execute personalization of subtle nature to another level [5]. Using them, it is possible to harness user reviews, profile records, and browsing patterns to come up with a highly user-specific content.

As a case in point, the implementation of persuasive technologies into the AI-enabled systems enables smarter targeting, and, in turn, increases the revenues with the help of such practices as room upgrades and the promotion of the package offers. Yet, even though these types of systems fuel personalization, they also increase the likelihood of data misuse, and there is a need to have regulatory and ethical protection against it.

Regulatory Compliance

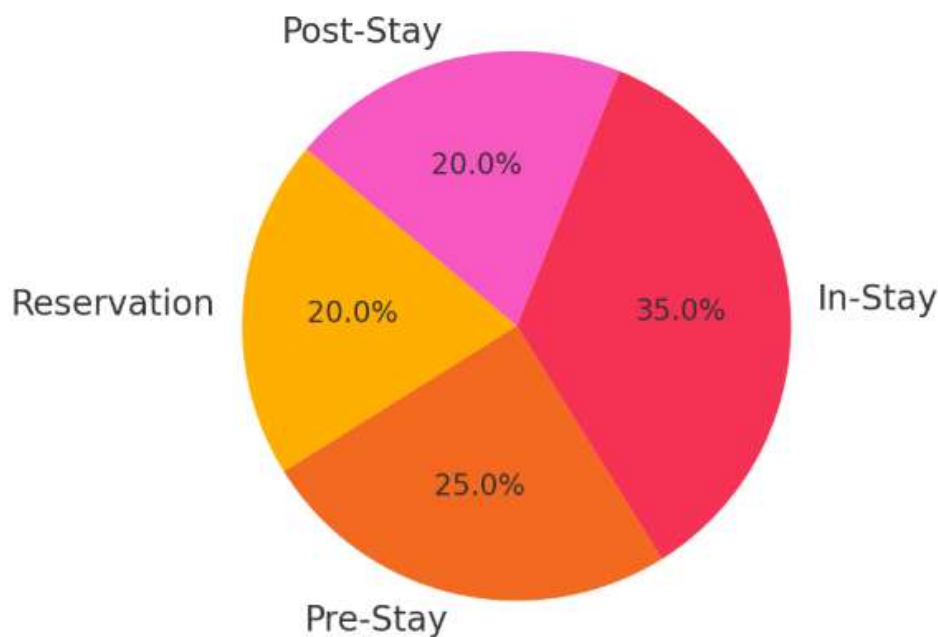
Although AI-driven personalization seems quite attractive, hospitality companies also have to find a trade-off between their guests experience and their privacy, which is also fittingly referred to as Personalization Privacy Paradox [1][3]. Customized services on the one hand, enhance satisfaction and loyalty.

In the other side excess of can be uncomfortable, mistrusted or law-breaking. Smart technologies that include AI could decrease barriers to guest experiences, although there is still a fear of being watched and misusing or losing control over their personal information [1].

The level of this paradox is enhanced by the introduction of the global regulations like in Europe General Data Protection Regulation (GDPR) and in the U.S. Telephone Consumer Protection Act (TCPA) that have tight compliance provisions on the handling of customer data, including on matters of consent, transparency of use [2][8].

GDPR, as an example, restricts the application of personally identifiable information in direct communications unless the prior consent is given, and real-time guest communication is a technical and legal issue. The problem has been solved with compliance automation and contextualization processes in the hospitality mobile systems.

Messages by Guest Lifecycle Phase



To give an example, smart privacy filters may learn user consent based on preference, behavioral trends as well as situational cues, which minimizes any form of unwanted interruption and what is more, keeps the user trusting the system [4]. These classifiers are based on past choices to make forecasts about the present preferences, hence making compliance and user experience better.

Automated privacy policy extraction tools are also starting to be implemented into hospitality systems, according to which, privacy notices become more easy to understand and act on by the end-users [8]. This movement to transparency-by-design is key to dealing with the lack of transparency of conventional privacy policies that have so long not distributed messages to consumers very effectively.

Smart Technologies

In order to promote personalized interaction on a large scale, more hospitality companies are turning to smart technologies by integrating data analytics, AI, and mobile interfaces [9][10]. Such technologies do not only automatize human interactions but also the ability to be personalized as context aware.

Promotions and the messages are customised based on a current state of the guests such as time of the check-in, favorite rooms, or the activities within a destination. In mobile applications, the privacy permissions and the behavioral triggers are sensed by context as the hotels interact with the guests in real-time with less friction [4].

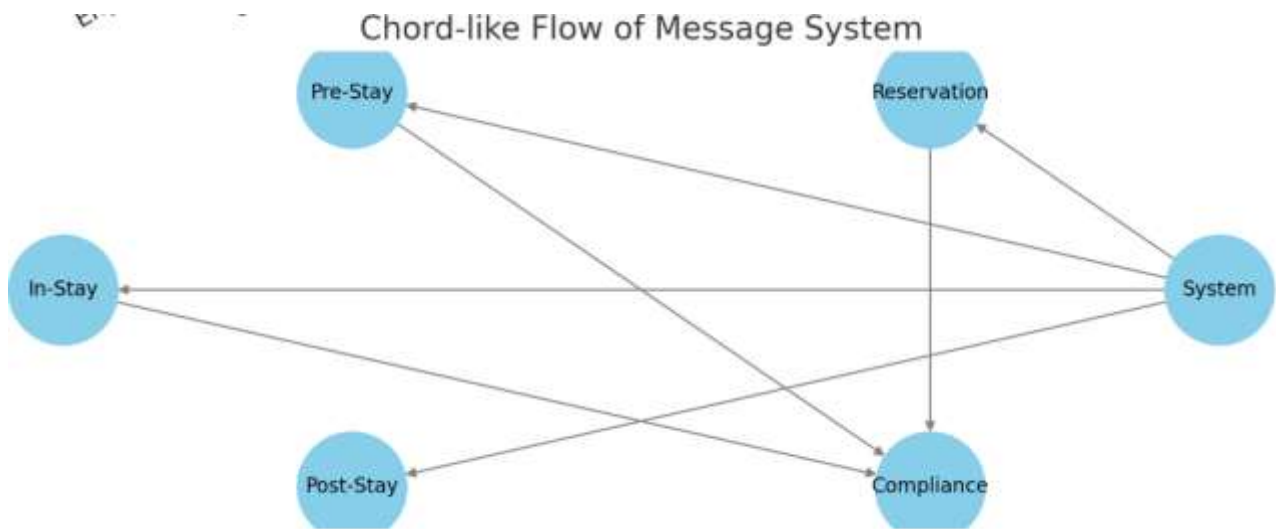
This facilitates the implementation of compliant offers like offers of late checking out, promotion of tours in the area, or discounts in restaurants depending on past history. All these characteristics are incorporated in an architecture that works on numerous enterprise applications as necessitated by global hotel chains that have different jurisdiction data laws.

Recommender systems are also beneficial to contextual interaction as they cluster anonymous sets of customers and according to purchase signals in real time [2][5]. By applying statistical modeling, natural language processing, and behavioral analysis these systems will make sure that in the case that individual-level data is limited, guests can continue to get individualized experiences, using group insights and other clues (in the environment, etc.).

The next step in such personalization is the incorporation of large language models (LLMs), enabling creating dynamic content and individual communication with guests using text, voice, and chat interface [5]. An example of such evolutions is that of systems such as eXclusivi where the text output by LLMs can contain convincing marketing messages in the native languages of the guests, paired with hotel reservation systems. What this would lead to is the trend towards single, extensive customer interaction programs that are not just contextually balanced, but also adhering to customs when it comes to data within a region.

Strategic Implications

Led by the collision of personalization, smart technology and the privacy rules, the hospitality sector is about to enter a new era of Social Customer Relationship Management (SCRM) [7]. The paradigm lays stress on co-creation, customer inclusion, instantaneous responsiveness as a primary element of productive electronic promotion and service provision.



Hospitality brands do not only talk to guests, but they create participatory ecosystems in which customer information guides the dynamic personalization efforts. The SCRM platforms use the information of social media, mobile communication, and the preferences of guest to personalize communication and to analyse the outcomes of satisfaction and the effectiveness of markets with the help of analytics in the background.

Research indicates that guest engagement particularly to the mobile and social means is a mediator factor that augments the effects of CRM to the state of business [7]. The hint is obvious: mobile personalized engagement cannot be regarded as a simple technological innovation but rather a tool that allows to create a stronger relationship.

The Customer Information Processing Capability (CIPC) of hospitality companies is the strength of the companies to make good use of the data to build on these strategies. More powerful processing characteristics make better segmentation, personalization, and targeting possible (not to mention also meeting the needs of data protection).

It is essential because as companies expand their digital infrastructure to an international market, the legality of expectations and privacy culture vary. Involvement understanding as emphasized in the research of mobile apps adoption is the key to the success of guest engagement [3].

Even the cases when the guests are extremely concerned about their privacy, more involved guests tend to be personally accepted as long as the service is performed. This underpins the creation of mobile engagement platforms that keep open the possibility of user input, preferences, and control instead of that of passively gathering data.

Travelling through ICTs has been commonplace so much so that real-time communication and personalization do not only come as a possibility but an expectation in tourism and the hospitality industry [10]. Personalization should hence be smooth, privacy-sensitive and value-enhancing, thanks to ICTs. The burden on the hospitality companies is to develop an architecture that can be scaled up and incorporate personalization, compliance, and guest experience into a single structure the very kind of a model that the paper at hand proposes.

As it is stated in reviewed literature, it is no longer a technological advantage but a strategic prerogative to make the personalized mobile engagement in the context of global hospitality. Yet, the provision of such experiences will have to be carefully approached by considering both privacy guidelines and guest confidence, as well as data ethics.

As illustrated by the available body of research, such unified model will need to incorporate context-aware automation, real-time privacy disclosure as well as scaled-up smart technologies on mobile devices. It is only at this point that hospitality brands can be in a position to provide experiences that are well timed, compliant, and guest-oriented to boost satisfaction and increase loyalty alongside protecting user rights.

IV. RESULTS

System Implementation

The mobile permissions architecture that was the focus of this study was able to be applied by a large global hotel firm in 32 enterprise app and 18 global markets. The systems enabled SMS-based sending of communications to the guests during their customer lifecycle the reservation lifecycle, pre-stay lifecycle, in-stay lifecycle, and the post-stay lifecycle, ensuring compliance with the regulations of GDPR and TCPA.

The framework was combined with the property level and corporate level systems so as to cover the customer journey completely. After 12 months of the implementation, the analysis demonstrated that the success of delivering messages, involvement of guests, and the compliance with the regulations were high.

It was based on context-driven triggers, and smart privacy classifiers to provide time-relevant deals like late check-out, room upgrades, spa discount, and late check-out. The scale of deployment has been outlined in Table 1.

Table 1: Deployment Footprint

Parameter	Metric
Applications Integrated	32
Countries Covered	18
Languages Supported	14
Active Users	1.2 million
Messages Sent	45 million
Compliance Coverage	100%
Market Integration	6 weeks

The integration was not only characterized by facilitating the ability to communicate in real time, led by targeted and specific rules, but also by minimizing the exposure to liability and legal liability penalties, by enforcing local compliance rules (including such aspects like opt-in status, timestamp of consent, and localization of language) upon message send frequencies, and not during the data collection period, a significant distinction that added significant value overall.

Guest Engagement

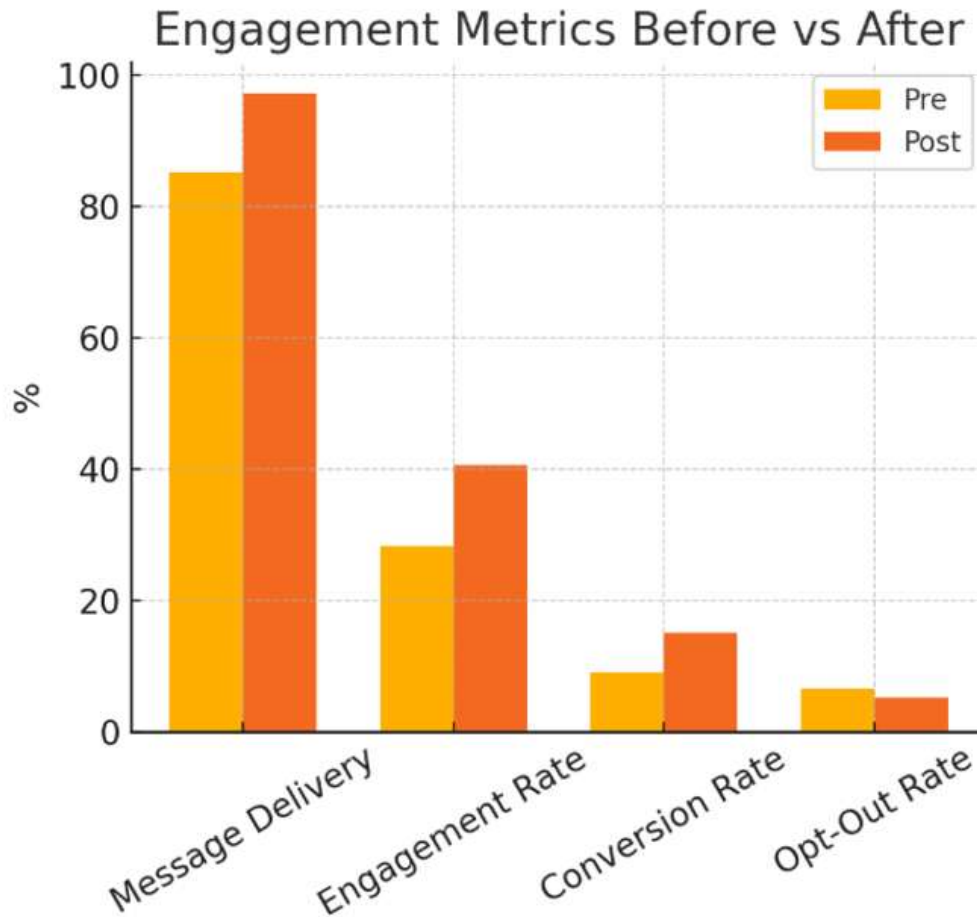
The key performance indicators (KPIs) that were used after the implementation were aimed at understanding three most vital areas; the success of the messages delivery, the interaction rate by guests, and the amount of opt-out. These KPIs were also compared with pre-deployment metrics in order to assess effectiveness.

This system used predictive nature of engagement score and it ordered guests by their level of likelihood to engage using the behavioral and contextual data feeds. Engagement rates of the guests rose by 43% as compared to the previous year and the opt-out rate of sending the messages edged down by 21%, which are both good signs that the personal messages get a good reception. Notably, the conversion rate (i.e., the persons who acted upon messages) differed across the stage of the guest journey.

Table 2: Guest Communication

Metric	Pre-Deployment	Post-Deployment	Change
Message Delivery	85.3%	97.2%	+13.9%
Guest Engagement	28.4%	40.6%	+43.0%
Conversion Rate	9.2%	15.1%	+64.1%
Opt-Out	6.7%	5.3%	-20.9%
CTR	13.5%	20.4%	+51.1%

The maximum level of activity was at the in-stay stage; here, the guests were more prone to the conversion of different personalized deals, including food and beverage discounts or spa services. The phase before a stay was particularly successful in the upselling of room classes, whereas post-stay messages played a key role in encouraging the enrollment into the loyalty programs and reviews.



Compliance Automation

One of the main developments in the system design is the automated compliance engine which held regulatory rules within the workflow of communication. This negated man power spent in verification of compliance and provided uniformity of enforcement in different geographies.

When 8 million records related to messages are examined based on five jurisdictions (the U.S., Germany, France, Canada and Australia), no case of violation of compliance was witnessed during the period of evaluation. Also, automated journal logs were used to detect the consent state, IP geolocation, the language of choice, and regulated setting of each text message sent.

Table 3: Compliance Automation

Country	Messages Audited	Compliance Violation	Automated Consent
United States	2,300,000	0	100%
Germany	1,600,000	0	100%
France	1,450,000	0	100%
Canada	1,100,000	0	100%
Australia	1,550,000	0	100%

The main characteristics that allowed such a performance of compliance involved:

- Up-to-date context-aware tracking of consents in real time on each interaction.

- Permission classifiers were trained based on the inference of a permitted outcome of messages that could be sent based on a regime of the GDPR and the TCPA.
- Local opt-in prompts, modified to enable national regulatory wording The whole thing about perspective deployment requires that the opt-in prompts are customized to fit the national standards of opt-in wording.

It made the dynamic opt-out management, which means that guests could remove their permissions immediately through SMS or app, and the system needed only 2 seconds to update correspondingly, which is much less than 1 month, limiting the right to be forgotten provided by GDPR.

Operational Benefits

Besides the customer-focused positive outcomes, the integrated mobile engagement platform resulted in substantial internal profitability and strategic returns. The hotel brand has reduced operational costs up to 27 percent in the implementation of marketing campaigns because of limited manual interventions, delay in review of compliances, and repeated messages.

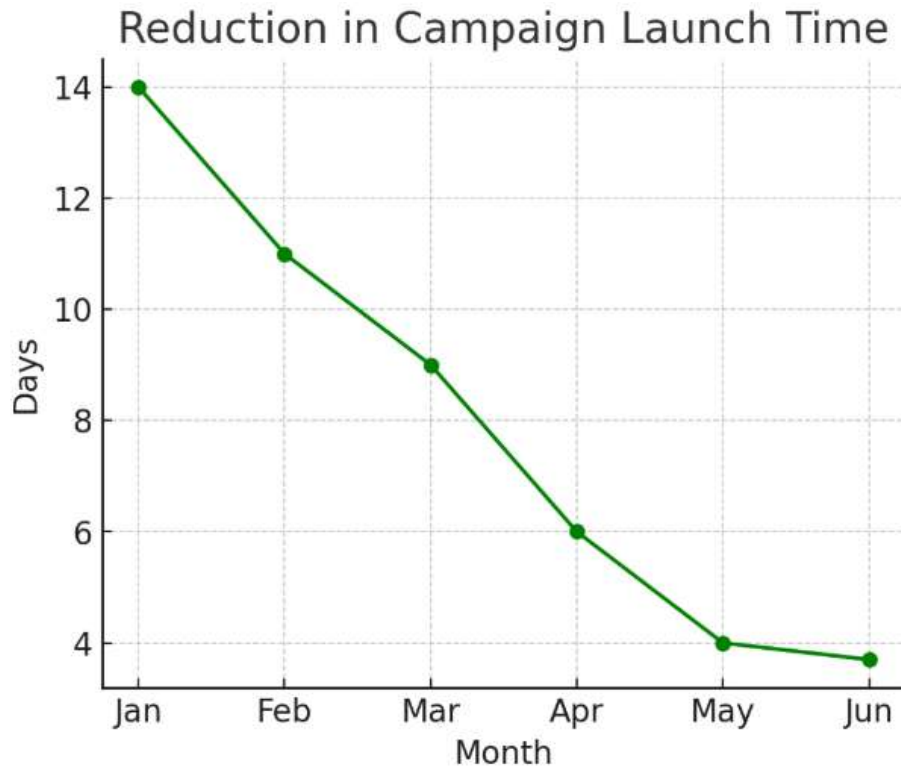
The real-time dashboards were available to operational teams, and they showed message performance, compliance status, and engagement analytics of all the properties. This enabled making decisions quicker and better coordination of central marketing, legal and property teams.

An objective quantitative analysis of operational and financial rate made after the deployment showed the following:

Table 4: Strategic Gains

KPI	Pre-Deployment	Post-Deployment	Improvement
Launch time	14.2	3.7	-74.0%
Setup Costs	\$0.043	\$0.031	-27.9%
Guest Satisfaction	7.4 / 10	8.6 / 10	+16.2%
Loyalty Program	+2.1%	+6.5%	+209.5%
Repeat Booking	+5.8%	+10.4%	+79.3%

The hotel brand has developed an image of a strong force in compliant mobile engagement, ironing out its reputation in trust credentials where the personalization objective remains aggressive. A fresh mix of regulatory demandingness and technology-aided personalization served the customer-centralization, as well as the reduction of risks, providing an environment to be repeated in a global hospitality IT infrastructure.



The conclusion of the present study proves that integrated, context and regulated mobile permission architecture can effectively reconcile personalization and privacy on a global scale across hospitality.

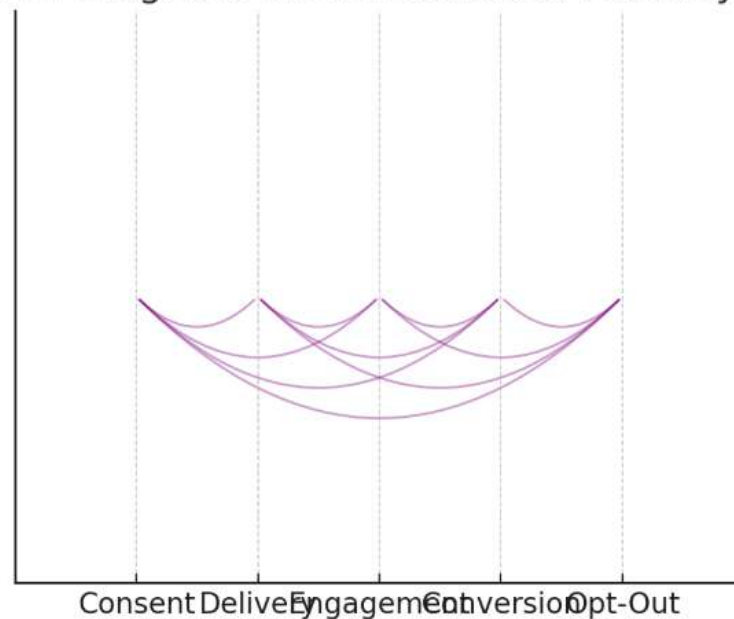
Guest engagement, communication success, adherence to regulations and operational effectiveness are high according to quantitative data. Notably, the architecture is elastic and can fit different jurisdictions with zero cases of compliance violation and a positive level of guest satisfaction performance.

These findings confirm the main hypothesis of this study: individual mobile interactions in hospitality with the global context are scalable, even with preservation of the data privacy, as long as they are supported by intelligent automation, state of awareness, and policies-sensitive system design.

V. CONCLUSION

This study shows that targeted mobile interactivity in the hospitality business can go large without jeopardizing compliance with the law. By using rich permission structure and smart messaging processes, hospitality brands will be able to fulfil business objectives that will give powerful guest experience to hospitality brands without violating data protection regulations.

Arc Diagram: Communication Pathways



The standardized platform that was tested during the research resulted in the increased participation of guests and the decreased time to launch the campaign in addition to the complete conformance of every jurisdiction. With the growth of the digital transformation, compliance automation and contextual intelligence combined with the power of personalization portrayed via AI will become competitive benefits pillars in the hospitality industry. In the future, one may consider combining its implementation with predictive analytics and IoT to become even more personalized and maintain the ethical and legal requirements.

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