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Market Dynamics and Accessibility of Sensory Emergency Pendent

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ABSTRACT:

Smart wireless emergency pendants are a technologically advanced personal safety device that provides a creative way to quickly access emergency assistance. The evolution, features, uses, advantages and difficulties of this wearable technology are all examined in this research paper. We clarify the critical role that smart and wireless emergency pendants play in revolutionizing emergency response systems, especially in healthcare settings, using a thorough review of the body of existing literature and technological advancements. The technological elements, including sensors and connectivity, are analysed, emphasizing how well they can identify emergencies, set off alarms, and enable timely communication with emergency services or designated contacts. This paper also addresses the wider ramifications of these devices, such as how they affect user safety, emergency response times, and adoption and implementation challenges. Further developments and applications of these devices in various contexts are made possible by the discussion of future trends and possible societal ramifications. In an increasingly technologically advanced and networked world, this study emphasizes the value of smart and wireless emergency pendants in boosting personal safety and emergency readiness.

Keywords: Emergency pendent, sensory, willingness to pay, market accessibility

Introduction:

The field of emergency response and personal safety is undergoing a significant upheaval in this era of demographic change and technological advancements. Smart and wireless emergency pendants, which have become essential tools for people in a variety of demographics, are at the centre of this development. With their cutting-edge features and functionalities, these pendants represent a new era of empowerment in the face of unforeseen challenges, offering more than just a sense of security.

A major factor in the creation of these pendants was the shifting demographics of the population, especially the increasing number of elderly people who want to stay independent while reducing the risks that come with getting older. Proactive safety measures are becoming more and more important as populations age and life expectancies rise. Seniors can confidently maintain autonomy with the help of smart pendants, which offer prompt access to assistance in the event of falls, medical emergencies, or other unanticipated incidents.

In addition, the prevalence of long-term medical disorders has increased the need for ongoing surveillance and quick reaction times. Healthcare management can be approached more proactively with smart pendants, which come with sophisticated sensors to track vital signs. These devices enable better management of chronic conditions and early intervention by giving wearers and medical professionals access to real-time data, which ultimately improves health outcomes.

Smart pendants not only meet the needs of the elderly and people with disabilities, but they also take care of the safety concerns of single people and people who participate in risky activities. A dependable emergency communication device can save the life of an outdoor enthusiast setting out on an adventure or a lone traveller venturing into uncharted territory. Fast and accurate assistance is ensured even in difficult or remote environments by features like GPS tracking.

With a focus on dependability, simplicity, and ease of use, the design concept of these pendants emphasizes user-centricity. People are more inclined to wear these tiny, light devices constantly because they are made to fit comfortably in the hand and not get in the way of everyday tasks. In addition, developments in battery science guarantee extended operation, doing away with the inconvenience of regular charging or battery replacement.

The possibilities for improving emergency response times and personal safety with smart and wireless emergency pendants are endless as technology develops. Incorporating biometric authentication for increased security or utilizing artificial intelligence for predictive analytics are just two examples of the innovative possibilities that lie ahead in this field.

Essentially, smart and wireless emergency pendants embody a paradigm shift in our understanding of personal safety and emergency response, transcending mere technological advancements. Through the provision of a dependable means of accessing aid, these gadgets enable people to lead secure and tranquil lives, cognizant of the fact that support is perpetually at their disposal, irrespective of the circumstances they might face.

Review of literature:

Empowering women's safety through IoT technology is a critical endeavour in today's society. This review explores the innovative use of IoT devices to create protection systems tailored for women. By integrating sensors and smart technologies, these systems aim to provide real-time monitoring and rapid response, ensuring women's safety in diverse contexts. Jain, A., & Gupta, A. (2017) introduces an IoT-based safety system designed specifically for women. It integrates various sensors like GPS, GSM, and Accelerometer to create a robust system for real-time monitoring and alerting. The system ensures quick response during emergencies and enhances women's safety. Swathi, M. V., & Divya, M. S. (2019) research presents a smart safety jacket empowered by IoT. The jacket incorporates sensors such as heart rate, temperature, and GPS. In dangerous situations, it triggers alerts and sends location details to predefined contacts, ensuring rapid assistance for women's safety. Patil, P., et al. (2020) proposes an IoT-based system focused on women's safety. It combines IoT and cloud computing, offering real-time monitoring and location tracking. The system aims to empower women by providing a reliable safety net, especially in vulnerable situations. Singh, S., & Jindal, A. (2021) introduces a smart safety system employing IoT and Machine Learning. It includes features like fall detection, panic button, and location tracking. The system adapts through ML algorithms, enhancing its effectiveness over time. Maheshwari, S., et al. (2022) presents a wearable safety device for women utilizing IoT technologies. The device includes sensors for heart rate, location tracking, and a panic button. It aims to provide a sense of security and immediate assistance in threatening situations. Sharma, A., & Singh, S. (2023) This review article summarizes various IoT-based safety systems designed for women. It covers different sensor technologies and their integration into wearable devices. The review emphasizes the importance of these systems in empowering women and ensuring their safety. Verma, R., & Kumari, S. (2023) discusses the integration of IoT with mobile applications to create a comprehensive safety solution for women. It includes features like live location tracking, distress signal generation, and real-time alerts. The system aims to empower women by providing them with a reliable safety network. Gupta, N., & Rani, P. (2023) presents an IoT-based safety system with smart emergency services tailored for women. The system incorporates GPS tracking, alert notifications, and automatic call features during emergencies. It aims to provide a sense of security and quick response in critical situations. Tyagi, M., & Raghav, A. (2024) introduces an IoT-based safety system using Raspberry Pi for women's safety. The system includes features like location tracking, alert generation, and a panic button. It aims to provide an effective and affordable solution for enhancing women's safety. Kumari, S., & Singh, A. (2024) reviews various IoT-based safety systems designed to empower women. It discusses different sensor technologies, data analytics, and real-time monitoring capabilities. The study emphasizes the significance of these systems in creating safer environments for women. The literature on empowering women's safety through IoT technology demonstrates a significant advancement in creating innovative solutions. These studies focus on integrating IoT devices, sensors, and data analytics to provide real-time monitoring, location tracking, and quick response mechanisms. The goal is to enhance women's safety and provide them with a sense of security in various environments.

Methodology:

This study intends to accomplish the following goals by distributing a survey that includes a series of questions examining demographic data, experience with the sensory pendent, preferred type of pendent, spending capacity, upgradation in the technology, using excel descriptive analysis

Measures of Central Tendency: Calculated mean, median, and mode to determine the average perception or factors influencing the preference of the type of pendent.

Measures of Variability: Calculated standard deviation to assess the extent of variation in participants' responses, providing insights into the consistency or divergence of opinions.

Frequency Distribution: Present frequency distributions to illustrate the distribution of responses across different options.

Objective:

1. To analyse the factors influencing the accessibility of sensory emergency pendants

2. To examine the consumer adoption patterns and preferences of sensory emergency pendant

Data interpretation:

Variables	Value		Frequency
Age	1	18-25	56
	2	26-40	3
	3	41-60	2
	4	Above 60	
Gender	1	Female	50
	2	Male	8
	3	Non Binary	

	4	Prefer Not to Say	
Using The Pendent	1	Yes	2
	2	No	56
Preferred Type of Pendent Willing to Use	1	Motion Sensor	7
	2	Fall Detection	6
	3	Heart Rate Monitor	16
	4	GPS Tracking	29
Importance of Accuracy of the Pendent	1	Extremely Important	6
	2	Very Important	18
	3	Somewhat Important	33
	4	Not Important	1
Comfortability in Using	1	Very Comfortable	1
	2	Comfortable	21
	3	Neutral	35
	4	Not Comfortable	1
Factors Influencing Choice	1	Size and weight	8
	2	Design and aesthetics	17
	3	Battery life and Easy Use	31
	4	Waterproof/resistant features	2
Satisfaction Level	1	Very Satisfied	9
	2	Satisfied	6
	3	Neutral	18
	4	Dissatisfied	25
Issues with Usage	1	Yes	6
	2	No	30
	3	May be	15
Importance of Connectivity Range	1	Extremely Important	17
	2	Very Important	20
	3	Somewhat Important	23
	4	Not Important	
Dedicated Monitoring Preference	1	Yes	33
	2	No	8
	3	May be	19
Willingness to Spend	1	Less than Rs.10000	33
	2	Rs.10000-Rs.15000	16
	3	Rs.15000-Rs.20000	7

	4	Rs.20000 and above	1
AI includence as a feature	1	Yes	44
	2	No	7
	3	May be	11

Comparative interpretation of Preferred type of Sensor and Willingness to spend Preferred type of Sensor:

Preferred type of Sensor	
Mean	2.896552
Standard Error	0.140627
Median	3
Mode	4
Standard Deviation	1.070983
Sample Variance	1.147005
Kurtosis	-0.89202
Skewness	-0.58643
Range	3
Minimum	1
Maximum	4
Sum	168
Count	58

Willingness to spend	
Mean	1.517241
Standard Error	0.09282
Median	1
Mode	1
Standard Deviation	0.706893
Sample Variance	0.499698
Kurtosis	1.581291
Skewness	1.325951
Range	3
Minimum	1
Maximum	4
Sum	88
Count	58

Interpretation

Mean: The mean preferred type of sensor rating is approximately 2.90. This suggests that, on average, respondents' preferred sensor type is around 2.90, which is closer to 3 and also the Median 4. Which is the Heart Rate Monitor and GPS tracking.

Standard Deviation: The standard deviation measures the dispersion or spread of the data around the mean. It is approximately 1.07. A higher standard deviation indicates greater variability in respondents' preferred sensor types.

Variance: The variance is approximately 1.15. It measures how much the preferred sensor ratings vary from the mean. A larger variance indicates more variability in the data.

Willingness to spend:

Interpretation

Mean: The mean willingness to spend rating is approximately 1.52. This suggests that, on average, respondents are willing to spend around 1.52 units on sensory emergency pendants. That is less than 10000.

Standard Deviation: The standard deviation measures the dispersion or spread of the data around the mean. It is approximately 0.71. A higher standard deviation indicates greater variability in respondents' willingness to spend.

Variance: The variance is approximately 0.50. It measures how much the willingness to spend ratings vary from the mean. A larger variance indicates more variability in the data.

Comparison:

Central tendency: The mean and median for the preferred type of sensor are relatively close, indicating that the preference is somewhat evenly distributed around the centre. In contrast, for willingness to spend, the mean is higher than the median, suggesting that the distribution is positively skewed, with more responses clustered towards lower spending levels.

Dispersion: The standard deviation for the preferred type of sensor is higher compared to willingness to spend, indicating greater variability in preferences for sensor types. The variance for the preferred type of sensor is also higher, suggesting that the preferences are more spread out compared to the willingness to spend.

While there are some differences in the distribution characteristics between the preferred type of sensor and willingness to spend, both variables provide valuable insights into consumer preferences. The preferred type of sensor shows a relatively even distribution with some inclination towards higher sensor types, while willingness to spend indicates a more skewed distribution towards lower spending levels.

Conclusion and recommendation:

The research findings delves into the evolving landscape of smart wireless emergency pendants, highlighting their critical role in reshaping emergency response systems, particularly in healthcare settings. The study underscores the transformative potential of these devices in enhancing personal safety and emergency readiness.

Key findings from the study shed light on the diverse preferences and adoption patterns of consumers regarding sensory emergency pendants. The analysis reveals that respondents exhibit varying preferences for the type of sensor used in these pendants, with a notable inclination towards the Heart Rate Monitor sensor type followed by GPS Tracking. Furthermore, the study elucidates consumers' willingness to spend on sensory emergency pendants, indicating a predominant preference for lower spending levels, particularly below Rs. 10,000.

The findings underscore the importance of market segmentation and targeted marketing strategies to cater to diverse consumer preferences. Manufacturers should consider offering a variety of sensor options and pricing tiers to appeal to different segments of the market effectively.

Firstly, the Insights into consumer preferences can inform product development efforts, guiding the integration of features and functionalities that align with user needs and preferences. Emphasizing user-centric design and ease of use can enhance the appeal and adoption of sensory emergency pendants.

Secondly, there is a need for consumer education initiatives to increase awareness and understanding of the benefits and functionalities of sensory emergency pendants. Clear and transparent communication about product features, usage guidelines, and pricing can facilitate informed decision-making among potential buyers.

Given the predominant preference for lower spending levels, manufacturers should focus on offering affordable options without compromising on quality and functionality. Enhancing accessibility through competitive pricing and distribution channels can broaden the reach of sensory emergency pendants to a wider consumer base.

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List all the material used from various sources for making this project proposal.

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