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吸引与赋能消费者：沙特阿拉伯在食品创新、新兴技术及信息误导时代如何实现有效沟通（中英文）

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摘要：本文梳理了沙特食品管理机构面临的挑战，探讨了有效沟通策略在食品安全管理机构中的重要作用，尤其是聚焦于沙特阿拉伯食品和药物管理局（SFDA）。采用创新策略，包括人工智能驱动的情感分析、聊天机器人和人工智能应用、处理错误信息的策略等，成为应对监测公众感知、解答咨询和科学不确定性、以及吸引关注等挑战的关键组成部分。在当前快速发展的数字化环境、新兴技术的涌现，以及虚假信息广泛传播的背景下，本文着眼于阐明风险沟通对于建立和维护消费者信任的重要性。风险沟通的动态格局要求机构不断调整策略并采取主动措施，以赋予消费者权利并确保食品安全。SFDA 的多维策略方法成为适应数字时代不断演变需求有效风险沟通的典范。

关键词：沙特阿拉伯；食品创新；新兴技术；信息误导；有效沟通

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Engaging and Empowering Consumers: Communicating Effectively in the Age of Food Innovations, Emerging Technologies, and Misinformation in Saudi Arabia (Chinese and English versions)

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Abstract: This article highlights challenges faced by food authorities and explores the imperative role that is played by effective communication strategies employed by food safety authorities with a specific focus on Saudi Food and Drug Authority (SFDA). It discusses different aspects related to communication with

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本专栏背景及第一作者、译者介绍详见 PC6-15，本文英文原文详见 P39-44

innovative strategies, such as AI-driven sentiment analysis, utilization of chatbots and artificial intelligence, addressing misinformation, emerge as crucial components in addressing challenges related to monitoring public perception, addressing queries and scientific uncertainty, and competing for attention. This article looks at the relevance of communication in fostering consumer trust, especially in the context of a rapidly evolving digital landscape, emerging technologies, and the prevalence of misinformation. The dynamic landscape of risk communication necessitates continuous adaptation and proactive measures to empower consumers and ensure food safety. The SFDA's multifaceted approach stands as a model for effective risk communication in the ever-evolving digital age.

Key words: Saudi Arabia; food innovation; emerging technologies; misinformation; effective communication

1 沙特阿拉伯的社会人口格局与沙特食品药品监督管理局概述

了解一个国家的社会人口构成对于旨在有效与公众接触和沟通的监管机构至关重要。就沙特阿拉伯而言，其人口的社会地理多样性呈现出特有的挑战与机遇，这种多样性促使沙特食品和药物管理局（SFDA）采取积极主动的举措，以应对这些复杂情况，尤其是在面对一个多元化且年轻化的人口时。

沙特阿拉伯，位居西亚，人口达到 3 200 万。根据 2022 年沙特人口普查数据显示，男性占比 50.2%，女性占比 49.8%，其中 70% 的人口年龄不超过 35 岁^[1]。这一数据强调理解并满足年轻人需求的重要性，这对于有效沟通至关重要。为深入了解沙特公民的经济优先事项，研究其平均月支出分布显得尤为必要。据统计局 2018 年数据，食品和饮料支出在家庭预算中占据重要位置，个人收入中有 18.8% 用于此项支出，位列支出优先级第二^[2]。SFDA 认识到其在确保这一大量家庭支出安全方面扮演的关键角色。此外，鉴于大约 80% 的食品来自 140 个国家的进口，食品安全问题超越了国界。SFDA 通过与其他国家部委的合作，在保障食品供应链的完整性方面发挥着关键作用。

在这种情况下，深入理解并有效应对沙特阿拉伯的社会人口统计对监管机构显得至关重要，尤其是对 SFDA。因此，SFDA 致力于通过识别人口的广泛多样性和独特性，有效沟通并履行其确保健康和安全的核心职责。包括针对人口构成的庞大多样性和独特性，解决与经济优先事项相关的问题，并通过合作确保食品供应链的安全性。

2 沙特阿拉伯对人工智能的远见承诺

沙特阿拉伯的“2030 愿景”聚焦于培育一个充满活力的社会、实现经济繁荣和建设一个雄心勃勃的国家，这一战略目标的实现依赖于采纳创新方法^[3]。在这一框架下，人工智能（AI）的革命性转型能力发挥着关键作用，ChatGPT 的崛起便是一个突出例证。该国在全球人工智能指数中的政府战略方面占据顶级位置，这一位置巩固了其对推进人工智能的坚定承诺。这是首个基于国家在人工智能投资、创新及实践层面的表现而设立的指数^[4]。

与穆罕默德·本·萨勒曼王储的远见和领导力相符，沙特阿拉伯通过成立沙特数据与人工智能局（SDAIA）及制定国家数据与人工智能战略，展示了其充分利用数据和人工智能潜能的坚定承诺^[5]。自 2003 年成立的 SFDA 将自身定位为基于科学的国际领先监管机构，致力于保护和促进公共健康。正如沙特阿拉伯王储穆罕默德·本·萨勒曼·本·阿卜杜勒-阿齐兹·阿勒沙特殿下所言：“我们正处于一个科学创新爆发、技术发展前所未有的、增长潜力无限的时代。如人工智能、物联网等新兴技术，若能得到充分利用，将有望应对全球许多挑战，为世界带来显著益处。”

SFDA 最近公布的战略规划明确了若干关键目标，其中特别强调了将提升沟通效率和公众意识作为首要任务。此外，该机构还特别注重提高先进数字技术的应用能力，以适应不断发展的数字化环境。SFDA 认识到社会人口统计特征的动态性，将吸引和赋能消费者作为其最优先事项。这一承诺与培育一个信息灵通、积极参与保障食品供应安全的社会的总体目标相一致。

3 食品管理机构在食品安全中的作用

全球范围内的食品安全机构通过实施监管框架，在维护公共健康方面发挥着关键的作用。其核心职责包括制定相关法规、进行持续监督、风险评估及有效沟通，旨在确保公众消费的食品安全性，保护消费者免受食品带来的潜在风险。

在当今动态的环境中，食品管理机构面临着一些挑战，影响其确保食品安全和监管合规性的能力。这些挑战包括食品创新的快速发展、新兴技术的应用、错误信息的传播、对疫情的及时响应、不断变化的饮食行为，以及公众信任度的波动。随着数字技术的广泛应用，还会使得这一格局进一步复杂化。

诸如转基因生物（GMO）、昆虫食品、精确发酵、培养肉、3D 打印食品和智能包装等创新技术正在重塑食品行业的未来。这些技术虽具有促进可持续发展并提升食品安全性的潜力，但也在公众理解方面存在挑战，导致消费者产生怀疑和恐惧心理。另外，信息的迅速传播结合社交媒体平台上虚假信息的泛滥，为维护公众信任带来了进一步的挑战。因此，维护公众信任需要积极的沟通策略，以应对新食品技术不断发展的监管标准。

世界卫生组织（WHO）认识到利益相关方参与度和风险沟通的重要性，并强调了采用战略沟通方法的必要性。世界卫生组织的全球食品安全战略优先事项之一是“加强利益相关方参与和风险沟通”^[6]。这一共识彰显了全球对于有效沟通在确保食品安全中关键作用的认同。基于全球性原则，SFDA 强调了消费者参与和赋权的重要性。这与其加强沟通和提高公众意识的战略目标相一致。SFDA 认识到，有效沟通不仅是传播信息，还要在消费者中培养一种赋权感，因此致力于缩小监管标准与公众理解之间的差异。在食品安全、技术进步和沟通策略相互作用的复杂背景下，食品管理机构需要采取全面且灵活的方法。面对创新、虚假信息和公众认知所带来的挑战，需要致力于不断发展监管标准，并实施有效的沟通策略。在应对这一复杂局面时，监管机构与国际机构之

间的合作变得至关重要，共同促进一个更安全、更具韧性的全球食品系统的未来。

4 SFDA 对现代风险沟通动态格局的驾驭

通过有效的风险沟通赋予消费者权力对于确保食品安全至关重要。面对当代通信渠道固有的各种挑战，SFDA 采取了战略性的沟通方法以应对这些复杂性。包括 SFDA 在内的食品管理机构在努力有效地向公众传达食品安全措施时遇到的诸多挑战，其中一个首要挑战涉及监测和适应公众对食品安全观念的演变，因为这些观念可能会对公众信任产生重大影响。食品管理机构需要重视理解公众对食品安全的看法，从而能够制定促进持续改进的沟通策略。另一个关键挑战是面对在多个平台上接收到的大量公众查询，考虑到这些问题的感性和往往紧迫的性质，这就需要迅速作出反应，提供信息，同时微妙地平衡透明度和保密性。此外，食品管理机构必须应对虚假信息的传播，这可能会对公众信任产生影响。及时纠正虚假声明和谣言，并提供清晰且基于证据的信息，是缓解虚假信息影响的关键。在当今这个注意力有限的世界里，在大量可用信息中争取公众注意力成为另一大挑战。因此，食品管理机构需要采取视觉吸引力强的内容、采用交互式格式，并保持定期、相关的沟通，以确保其始终处于公众意识的前沿。有效应对这些挑战对于维护食品安全标准、确保公众接收到正确的信息和对采取的措施充满信心至关重要。

5 沙特阿拉伯沟通格局的演变

随着时间的推移，沟通方式已经从传统的单向渠道转变为一个持续接收、随时可访问的信息流，并且以通知为驱动。沙特消费者行为的变化反映了更广泛的社会变革，这些变革受到经济发展、全球化和技术进步的影响。鉴于 70% 的沙特人口年龄在 35 岁以下，年轻一代与全球趋势的连接性在塑造消费者行为方面发挥着重要作用。消费者通过媒体和旅行接触到全球趋势并影响了其偏好，这促进了外出就餐文化，并使得消费者越来越关注有机和更健康的食品选择。随着沙特阿

拉伯朝着经济多元化和技术进步推进的 2030 年愿景的进步, 预计消费者行为将持续演变。随着 99% 的沙特人口使用互联网, 日均在线时间超过 7 h, 以及 79% 的人积极使用社交媒体, NEOM 反映出技术对社区行为的深远影响。鉴于这些变化, SFDA 已战略性地调整其沟通策略, 以适应数字化偏好并优化传播效果。

拿 NEOM 举例来说, NEOM 是沙特阿拉伯王国西北部的一个地区; NEOM 的名称源自“新未来”的概念。2024 年, NEOM 制定了“预见沙特阿拉伯由人工智能驱动的未来愿景”, 就很好的体现了沙特阿拉伯对人工智能驱动未来的愿景, 代表着对保持技术进步领先地位的承诺。凭借成为“未来之地, 在这里, 最伟大的头脑和最优秀的人才得以发挥, 将开创性想法具体化, 并在一个以想象力为灵感的世界中超越界限”的宏大愿景, NEOM 旨在利用人工智能、机器人技术和下一代技术, 实时提升人们的体验和服务, 使之无缝、直观且针对个人需求量身定制 (图 1) [7]。



图 1 NEOM
Fig.1 NEOM

6 SFDA 的沟通策略

现代沟通的动态特性要求食品管理机构不断调整其策略。有效的风险沟通, 旨在赋予消费者权力, 这包括了解不断变化的公众感知、解答疑问、应对错误信息和科学不确定性, 并在数字时代中战略性地吸引注意力。随着技术的持续进步, 促进沟通方法的创新对于保障食品安全和公共卫生至关重要。

6.1 监测公众感知: 主动策略

SFDA 认识到监测公众感知以定制沟通策略和赋能消费者的重要性。面对传统方法耗时且缺

乏实时洞察的能力这一挑战, SFDA 使用人工智能驱动的情感分析技术, 提供对公众情绪的实时洞察, 并加深对新兴关注点的理解, 食品管理机构可以利用人工智能驱动的情感分析进行高效及时的监测。另一个挑战是数据来源的多样性。食品管理机构可以通过使用人工智能分析来自社交媒体的大量数据, 克服仅依赖调查和报告的局限性, 将消费者情绪作为食品安全的战略工具。另一个挑战是战略性地利用消费者情感, 可以指导决策制定、沟通努力以及监管行动, 有助于整体食品安全。

通过人工智能进行消费者情绪分析, 有可能彻底改变食品管理机构对公众关切的理解和应对方式。利用消费者情绪分析带来几个关键优势。首先, 人工智能能够实时检测到新兴的关注点, 使得及时干预成为可能。此外, 它有助于识别引起公众关注的产品, 促进有针对性的调查和召回。消费者情绪分析还为设计有效的公众意识宣传活动提供了宝贵的见解, 并帮助定制能够引起公众共鸣的回应。通过情绪分析的应用, 食品管理机构可以提高他们的沟通效率, 有效抵制错误信息, 并确保监管框架与当前的公众关切相一致。这种方法也促进了资源优化配制, 因为它允许当局基于情感分析专注于影响深远的领域, 从而确保资源的高效利用。

6.2 解答公众疑问: 人工智能聊天机器人的作用

SFDA 面临的一个主要挑战是处理大量的公众查询并提供快速准确回复。AI 聊天机器人的集成, 例如 Sara 是一个数字助手, 全天候运行, 以互动方式提供沙特食品和药物管理局管辖范围内所有领域的信息。“Ask Sara”, 是一个使消费者能够直接沟通并从可靠信任的来源获取信息的服务系统, 在提升信息传播效率、实现全天候服务、减轻工作负担以及确保信息传递的一致性和准确性方面发挥了至关重要的作用。又例如, Tameni 是一款应用程序, 意为“Reassure Me”, 展示了沙特食品和药物管理局 (SFDA) 致力于为消费者提供关于受监管产品的准确信息的承诺。该应用程序提供有关营养和食品安全的信息。SFDA 持续改进该应用程序, 以提供额外的服务。

利用人工智能聊天机器人处理公众咨询具有诸多重要优势。首先, AI 聊天机器人在处理来自多个平台的大量公众查询方面表现出高效的处理能力。其次, AI 聊天机器人能在回应中表现出同理心, 达成透明度与保密性之间的平衡。此外, 这些聊天机器人可以提供多语言支持, 从而确保满足不同语言偏好的可访问性。

6.3 对抗虚假信息: 多元化策略

应对虚假信息是食品管理机构面临的一个关键挑战, 这要求采取多方位的策略。SFDA 实施多种有效策略来对抗虚假信息, 其运营着一个名为“谣言与事实”的网页, 旨在解决和纠正社区内流传的虚假信息, 此举为公众寻求准确信息提供了一个可靠的渠道。此外, SFDA 还部署了一系列工具和技术, 旨在迅速识别虚假信息的流行趋势。这种前瞻性的做法使得及时干预成为可能, 阻止了虚假信息的扩散及其可能带来的有害后果。通过运用行为科学和劝导理论的原则, 食品管理机构还能设计出符合人们在社交媒体平台上沟通方式的信息, 以增强准确信息传播的共鸣和影响力。食品管理机构还能展示对认知偏差的认识, 包括确认偏误, 以构建避免触发个体防御性反应的信息。通过识别和解决这些偏差, 管理机构力求以中立而有说服力的方式确保安全信息的正确传播。

6.4 在数字时代吸引人们的注意力: 策略

在注意力减少和信息泛滥的当今世界, 食品管理机构面临着吸引人们注意力的挑战。为了保持其信息的相关性和吸引力, SFDA 采用了多种策略。这包括利用视觉和互动内容格式, 以提升其信息传递的有效性, 确保沟通既定期又及时, 同时根据个人的偏好和兴趣进行个性化定制。此外, 该机构密切关注信息消费的最新趋势, 确保他们的信息脱颖而出并达到目标受众。建立和维护公众信任也是其工作的重点之一, 沙特食品药品监督管理局认识到, 在众多可获取信息源的竞争中, 信任是关键的竞争力。通过这些多方位的方法, 沙特食品药品监督管理局旨在有效地与公众互动, 并在不断演变的信息生态系统中履行其使命。

6.5 应对科学不确定性: 战略方法

面对在科学不确定性背景下传达食品风险的挑战, 包括 SFDA 在内的食品安全机构采取了专注于两个关键原则的策略方法。首先, 他们强调避免不必要的复杂性, 这意味着仅在必要时才讨论科学不确定性, 并遵循既定指南。其次, SFDA 将安全的坚定承诺作为其工作的核心, 为驾驭科学不确定性的复杂领域奠定了坚实的基础。

7 结论

本文梳理了食品管理机构面临的挑战, 以 SFDA 为例进行案例分析。采用创新策略, 如人工智能驱动的情感分析、聊天机器人集成以及建立合作伙伴关系, 成为应对监测公众感知、解答咨询和科学不确定性、对抗错误信息、以及争夺关注等挑战的关键组成部分。风险沟通的动态格局要求机构不断调整策略并采取主动措施, 以赋予消费者权利并确保食品安全。SFDA 的多维策略方法成为适应数字时代不断演变需求的有效风险沟通的典范。

本文探讨强调了在食品安全治理领域中有有效沟通的至关重要性, 并得出几个关键结论:

(1) 有效沟通至关重要, 是建立和维持食品管理机构内部消费者信任的基石。在社会动态不断演变的背景下, 沟通在引导公众感知的复杂环境中的作用变得愈加关键。

(2) 创新技术的融合, 特别是聊天机器人和人工智能的引入, 展示了现代工具在应对公众咨询和增强整体沟通策略方面的适应性和响应能力。这些技术进步标志着向更加动态和敏捷的公众参与模式的转变。

(3) 运用人工智能进行消费者情绪监测已成为一种变革性的方法。实时了解公众关注的问题, 使得食品管理机构能够定制沟通策略, 以最大限度地发挥作用。及时理解和回应新兴问题的能力, 不仅促进了透明度也在公众中树立了安心感。


(4) 应对错误信息成为维护公众信任和确保准确沟通的关键。面对虚假声明和谣言快速吸引公众注意力的现实, 食品管理机构必须采用根植于行为科学原理的有效策略来对抗错误信息, 确

保其信息传递的完整性。

在不断演变的食品安全治理环境中，有效沟通策略的发展必须与新兴技术、消费者行为的演变以及信息传播方式的动态变化相适应。通过采纳创新手段、利用人工智能技术，并优先考虑透明和准确的沟通，食品管理机构可以应对当前的挑战，并为构建一个具有弹性和高响应性的未来框架打下基础。确保食品安全的过程与有效沟通的能力密切相关，这有助于培育机构与公众之间的信任和透明度。

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Engaging and Empowering Consumers: Communicating Effectively in the Age of Food Innovations, Emerging Technologies, and Misinformation in Saudi Arabia (英文原文)

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Abstract: This article highlights challenges faced by food authorities and explores the imperative role that is played by effective communication strategies employed by food safety authorities with a specific focus on Saudi Food and Drug Authority (SFDA). It was presented at China International Food Safety & Quality Conference 2023 discussing different aspects related to communication with innovative strategies, such as AI-driven sentiment analysis, utilization of chatbots and artificial intelligence, addressing misinformation, emerge as crucial components in addressing challenges related to monitoring public perception, addressing queries and scientific uncertainty, and competing for attention. This article looks at the relevance of communication in fostering consumer trust, especially in the context of a rapidly evolving digital landscape, emerging technologies, and the prevalence of misinformation. The dynamic landscape of risk communication necessitates continuous adaptation and proactive measures to empower consumers and ensure food safety. The SFDA's multifaceted approach stands as a model for effective risk communication in the ever-evolving digital age.

Key words: Saudi Arabia; food innovations; emerging technologies; misinformation; communicating effectively

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1 OVERVIEW OF SAUDI ARABIA'S SOCIODEMOGRAPHIC LANDSCAPE AND SAUDI FOOD AND DRUG AUTHORITY

Understanding the sociodemographic composition of a nation is crucial for regulatory bodies aiming to engage and communicate effectively with the public. In the case of Saudi Arabia, the diversity of its sociodemographic landscape present unique challenges and opportunities, prompting proactive initiatives by the Saudi Food and Drug Authority (SFDA) to navigate these complexities, especially within a diverse and youthful population.

Saudi Arabia is a country located in Western Asia and has a a population of 32 million. This distribution reveals a gender split of 50.2% male and 49.8% female, with a substantial 70% of the population below the age of 35^[1]. This highlights the importance of addressing the needs of the youthful population. It is imperative to gain a comprehensive understanding of this demographic to communicate effectively. To gain insight into the economic priorities of Saudi citizens, examining the distribution of average monthly expenditure becomes imperative. Notably, food and drinks secure the second position in spending priorities, with individuals allocating 18.8% of their income to this category^[2]. The SFDA, in response, acknowledges its pivotal role in ensuring the safety of this substantial portion of household spending. Moreover, given that approximately 80% of the food is imported from 140 countries, the dynamics of food safety extend beyond national borders. In collaboration with other national ministries, the SFDA emerges as a key player in safeguarding the integrity of the food supply chain.

In this light, an understanding and navigation of the sociodemographics in Saudi Arabia is of the essence for the regulatory bodies more so the SFDA. Therefore, the SFDA aims communicating effectively and deliver its key responsibility of ensuring health and safety by recognizing to compose population in its huge diversity and uniqueness, addressing with the concerns connected to the economic priorities and by collaborating to ensure the safety of food supply chain.

2 VISIONARY COMMITMENT TOWARD ARTIFICIAL INTELLIGENCE OF SAUDI ARABIA

Saudi Arabia's overarching vision (2030), centered on fostering a vibrant society, a thriving

economy, and an ambitious nation, necessitates innovative approaches^[3]. The transformative force of the artificial intelligence revolution, exemplified by the rise of ChatGPT, plays a pivotal role in realizing these ambitious goals. The nation's unwavering commitment to advancing artificial intelligence is solidified by its top-ranking position in the Global AI Index for Government Strategy, which is the first index to benchmark countries on their level of investment, innovation, and implementation of artificial intelligence^[4].

In alignment with the visionary leadership of Crown Prince Mohammed bin Salman, the establishment of the Saudi Data & AI Authority (SDAIA) and the National Strategy for Data & AI underscores the commitment to harnessing the power of data and artificial intelligence^[5]. Founded in 2003, the Saudi Food and Drug Authority (SFDA) positions itself as a leading international science-based regulator, driven by a mission to protect and promote public health. "We are living in a time of scientific innovation, unprecedented technology, and unlimited growth prospects. These new technologies such as Artificial Intelligence and the Internet of Things, if used optimally, can spare the world many disadvantages and can bring enormous benefits to the world." His Royal Highness Prince Mohammed bin Salman bin Abdulaziz Al Saud, Crown Prince, Prime Minister, and Chairman of SDAIA's Board of Directors

The SFDA's recently unveiled strategy plan accentuates several key objectives, placing a significant emphasis on improving communication and awareness. Furthermore, there is a dedicated effort to augment the utilization of advanced digital technology, aligning with the ever-evolving digital landscape. Recognizing the dynamic nature of the sociodemographic landscape, the SFDA prioritizes engaging and empowering consumers as its top priority. This commitment resonates with the overarching aim of nurturing a society that is informed and actively participates in ensuring the safety of the food supply.

3 THE ROLE OF FOOD AUTHORITIES IN FOOD SAFETY

Food agencies globally play a pivotal role in upholding public health through the implementation of regulatory frameworks. The core responsibilities encompass regulations, surveillance, risk assessment, and effective communication, all converging towards

the ultimate goal of ensuring the safety of the food consumed by the public.

In today's dynamic environment, food agencies encounter an array of challenges that impact their ability to ensure food safety and regulatory compliance. These challenges include the rapid pace of food innovations, emerging technologies, misinformation, timely response to outbreaks, changing eating behaviors, and fluctuations in public trust. The extensive use of digital applications further complicates the landscape.

Innovations such as Genetically Modified Organisms (GMOs), Insect-Based Foods, Precision Fermentation, Cultured Meat, 3D Printing of Food, and Smart Packaging are shaping the future of the food industry. While they hold potential for promoting sustainability and improving food safety, they also present challenges in public understanding, leading to skepticism and fear among consumers. The rapid dissemination of information, coupled with the prevalence of misinformation on social media platforms, poses a significant challenge. Maintaining public trust requires proactive communication strategies that address evolving regulatory standards for new food technologies.

The World Health Organization (WHO) recognizes the importance of stakeholder engagement and risk communication, emphasizing the need for strategic communication approaches. One of the WHO's global strategy for food safety strategic priorities is "Strengthening Stakeholder Engagement and Risk Communication"^[6]. This shared commitment underscores the global consensus on the pivotal role of effective communication in ensuring food safety. The SFDA, in line with global principles, emphasizes the importance of engaging and empowering consumers. This approach aligns with the agency's strategic goal of enhancing communication and awareness. Recognizing that effective communication is about disseminating information as well as fostering a sense of empowerment among consumers, the SFDA actively strives to bridge the gap between regulatory standards and public understanding.

Therefore, the complex interplay of food safety, technological advancements, and communication strategies requires a comprehensive and adaptive approach by food agencies. Addressing challenges posed by innovations, misinformation, and public perception necessitates a commitment to evolving regulatory standards and employing effective

communication strategies. As we navigate this intricate landscape, the collaboration between regulatory bodies and international agencies becomes imperative for fostering a safer and more resilient global food future.

4 NAVIGATING THE DYNAMIC LANDSCAPE OF RISK COMMUNICATION IN THE MODERN ERA

Empowering consumers through effective risk communication is imperative in ensuring food safety. The SFDA faces various challenges inherent in contemporary communication channels, and in response, employs strategic communication approaches to navigate these complexities. Food authorities, including the SFDA, encounter several challenges in their efforts to effectively communicate food safety measures to the public. One of the foremost challenges involves monitoring and adapting to evolving public perceptions of food safety, as these perceptions can significantly impact public trust. Food authorities need to place a strong emphasis on understanding these perceptions, allowing them to tailor communication strategies that foster continuous improvement. Another critical challenge is addressing the numerous public queries that arise on various platforms. This entails responding promptly and informatively while delicately balancing transparency and confidentiality, given the emotional and often urgent nature of these questions. Furthermore, food authorities must grapple with the spread of misinformation, which has the potential impact on public trust. Addressing false claims and rumors promptly and providing clear, evidence-based information are vital components in mitigating the spread of misinformation. In today's world, where attention spans are limited, another challenge is competing for the public's attention amid the vast amount of available information. To meet this challenge, food authorities need to employ visually appealing content, interactive formats, and maintains regular, relevant communication to ensure they remain at the forefront of public awareness. Navigating these challenges is essential to upholding food safety standards and ensuring that the public is well-informed and confident in the measures taken by food authorities.

5 EVOLUTION OF COMMUNICATION LANDSCAPE

Over the years, communication has transitioned

from traditional, one-way channels to a constant inflow of information accessible from anywhere, driven by notifications. The shift in Saudi consumer behavior reflects broader societal changes influenced by economic development, globalization, and technological advancements. With 70% of Saudis under the age of 35, the younger generation, connected to global trends, plays a significant role in shaping consumer behavior. Exposure to global trends through media and travel impacts consumer preferences, fostering a dining-out culture with a growing interest in organic and healthier food choices. As Saudi Arabia progresses towards Vision 2030, driven by economic diversification and technological advancements, consumer behavior is expected to continue evolving. With 99% of Saudis using the internet, spending over 7 hours daily online, and 79% actively engaged in social media, which reflects the profound impact of technology on community behavior. Recognizing these changes, the SFDA has strategically adapted its communication methods to align with digital preferences and optimize outreach for maximum effectiveness.

NEOM, for example, which is a region in the north west of the Kingdom of Saudi Arabia, derives its name from the concept of a ‘new future.’ NEOM has developed a vision for a Glimpse into Saudi Arabia’s AI-Powered Future vision. NEOM, exemplifying Saudi Arabia’s vision for an AI-powered future, represents a commitment to staying ahead of technological advancements. With the overarching vision of becoming “The land of the future, where the greatest minds and best talents are empowered to embody pioneering ideas and exceed boundaries in a world inspired by imagination”. Utilizing AI, robotics, and next-generation technologies, NEOM aims to enhance people’s experiences and services in real-time, making them seamless, intuitive, and tailored to people^[7].



Fig.1 NEOM

6 COMMUNICATION STRATEGIES OF SFDA

The dynamic nature of modern communication requires food authorities to continuously adapt their strategies. Empowering consumers through effective risk communication involves understanding evolving public perceptions, addressing queries, misinformation and scientific uncertainty, and strategically competing for attention in the digital age. As technology continues to advance, fostering innovation in communication methods becomes paramount for ensuring food safety and public health.

6.1 Monitoring Public Perception: Proactive Strategies

The SFDA recognizes the importance of monitoring public perception to tailor communication strategies and empower consumers. Challenges in traditional methods prompt the use of AI-driven sentiment analysis, providing real-time insights into public sentiments and enhancing the understanding of emerging concerns. One of the challenges is that traditional methods are time-consuming and lack real-time insights. Food authorities can leverage AI-driven sentiment analysis for efficient and timely monitoring. Another challenge is the diverse data sources. Food authorities can address the limitations of relying on surveys and reports by utilizing AI to analyze vast amounts of data from social media, employing consumer sentiment as a strategic tool for food safety. Another challenge is the strategic use of consumer sentiment. Understanding consumer sentiment guides decision-making, communication efforts, and regulatory actions, contributing to overall food safety.

Consumer sentiment analysis through AI has the potential to revolutionize how food authorities understand and respond to public concerns. There are several key advantages in leveraging consumer sentiment. Firstly, AI enables real-time detection of emerging concerns, allowing for prompt intervention when necessary. Moreover, it aids in the identification of products with increased public concern, facilitating targeted investigations and recalls. Additionally, consumer sentiment offers valuable insights for crafting effective public awareness campaigns and tailoring responses that resonate with the public. By leveraging sentiment analysis, food authorities can enhance their communication efforts, combat misinformation, and

align regulatory frameworks with prevailing public concerns. This approach also promotes resource optimization as it allows authorities to focus on high-impact areas based on sentiment analysis, ensuring efficient resource utilization.

6.2 Addressing Public Queries: The Role of AI Chatbots

The SFDA faces challenges in managing a high volume of public queries and providing quick and accurate responses. The integration of AI chatbots, exemplified by “Sara” a digital assistant that operates 24/7 to provide information in all areas of the SFDA’s jurisdiction in an interactive way. “Ask Sara,” a service that enables consumers to communicate directly and provide them information from reliable and trusted source, proves instrumental in efficient information dissemination, 24/7 availability, workload reduction, and maintaining consistent and accurate information delivery. And “the Tameni App” meaning “Reassure Me,” exemplifies the SFDA’s commitment to empowering consumers with accurate information about supervised products. The app provides information regarding nutrition and food safety. The SFDA continues to enhance the app to offer additional services.

Leveraging AI Chatbots for addressing public queries yields several significant advantages. AI chatbots exhibit exceptional efficiency in handling the high volume of public queries originating from diverse platforms. Furthermore, AI chatbots can offer empathy in responses, striking a balance between transparency and confidentiality. Additionally, these chatbots can offer multilingual support, thereby guaranteeing accessibility for diverse language preferences.

6.3 Combatting Misinformation: A Multifaceted Approach

Addressing misinformation presents a critical challenge for food authorities, requiring a multifaceted approach. The SFDA employs various strategies to combat misinformation effectively. The SFDA operates a dedicated page known as “Rumors–Fact,” which is dedicated to addressing and rectifying misinformation circulating within the community. This initiative provides a credible source for individuals seeking accurate information. Furthermore, the SFDA implements tools and techniques designed to identify emerging trends in misinformation swiftly. This proactive approach

enables timely intervention, preventing the escalation of false information and mitigating its potentially harmful consequences. In addition, food authorities can leverage principles derived from behavioral science and nudge theories to craft messages that align with the way people communicate on social media platforms. This approach aims to enhance the resonance and impact of accurate information dissemination. Food authorities, also, can demonstrate awareness of cognitive biases, including confirmation bias, to construct messages that avoid triggering defensive reactions in individuals. By recognizing and addressing these biases, the authorities strive to present information in a neutral and persuasive manner.

6.4 Competing for People’s Attention: Strategies in the Digital Age

In a world with decreasing attention spans and information overload, food authorities face challenges in competing for people’s attention. The SFDA employs various strategies to stay relevant. These strategies include leveraging visual and interactive content formats to enhance the effectiveness of their messaging, ensuring that communication is both regular and prompt, tailored to individuals’ preferences and interests. Additionally, the SFDA keeps a keen eye on the evolving dynamics of information consumption, ensuring that their messages stand out and reach their intended audience. Establishing and maintaining trust is also an important goal, recognizing that trust is a crucial factor in competing with the myriad of information sources available to the public. Through these multifaceted approaches, the SFDA aims to effectively engage with the public and fulfill its mission in an ever-evolving information ecosystem.

6.5 Addressing Scientific Uncertainty: A Strategic Approach

Food safety authorities, including the SFDA, face challenges in communicating about food risks amidst scientific uncertainty. The SFDA has responded to this challenge by implementing a strategic approach that focuses on two key principles. First, they emphasize the avoidance of unnecessary complexity, meaning that discussions regarding scientific uncertainty are limited to essential circumstances, following established guidelines. Second, the SFDA prioritizes a steadfast commitment to safety, laying a solid foundation for navigating the intricate realm of scientific uncertainties.

7 CONCLUSION

These excerpts highlight challenges faced by food authorities, with the SFDA serving as a case study. Innovative strategies, including AI-driven sentiment analysis, chatbot integration, and collaborative partnerships, emerge as crucial components in addressing challenges related to monitoring public perception, addressing queries and scientific uncertainty, combating misinformation, and competing for attention. The dynamic landscape of risk communication necessitates continuous adaptation and proactive measures to empower consumers and ensure food safety. The SFDA's multifaceted approach stands as a model for effective risk communication in the ever-evolving digital age.

This article exploration underscores the paramount importance of effective communication in the realm of food safety governance. Several key takeaways emerge from this article include:

(1) Effective communication is essential and stands as a pivotal cornerstone in the foundation of building and sustaining consumer trust within the food authority. As societal dynamics evolve, the role of communication becomes increasingly crucial in navigating the complex landscape of public perception.

(2) The integration of innovative solutions, notably exemplified by the incorporation of chatbots and artificial intelligence, exemplifies the adaptability and responsiveness of modern tools in addressing public queries and enhancing overall communication strategies. These technological advancements signify a paradigm shift towards more dynamic and agile approaches in engaging with the public.

(3) Harnessing the power of artificial intelligence to monitor consumer sentiment emerges as a transformative approach. Real-time insights into public concerns enable food authorities to tailor communication strategies for maximum impact. The ability to comprehend and respond promptly to emerging issues fosters transparency and instills a sense of reassurance among the public.

(4) Addressing misinformation emerges as a linchpin in the quest to maintain public trust and ensure accurate communication. Recognizing the potential impact of false claims and rumors gaining rapid traction, food authorities must adopt robust strategies rooted in behavioral science principles to effectively combat misinformation and preserve the integrity of their messaging.

In the ever-evolving landscape of food safety governance, effective communication strategies must continuously adapt to meet the challenges posed by emerging technologies, shifting consumer behaviors, and the dynamic nature of information dissemination. By embracing innovation, leveraging AI, and prioritizing transparent and accurate communication, food authorities can address the current challenges and lay the groundwork for a resilient and responsive framework in the future. The journey towards ensuring food safety is intrinsically tied to the ability to communicate effectively, fostering a relationship of trust and transparency between authorities and the public they serve.

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See in its Chinese version P38. 