

# A Sustainable Digital Nutrition Education to Combat Workplace Obesity in Omani Higher Education Institutions: A Conceptual Paper Aligning Vision 2040 with the UN SDGs

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## Abstract

Obesity is a growing public health and productivity concern in Oman, particularly within higher education workplace settings in Oman, characterized by sedentary behaviors and poor dietary habits. According to the Oman Ministry of Health (2021), approximately 29% of the adult working population is classified as obese based on Body Mass Index ( $BMI \geq 30 \text{ kg/m}^2$ ), reflecting an estimated increase of 6 percentage points compared to national health estimates reported in 2018. This conceptual paper proposes a Sustainable Digital Nutrition Education (SDNE) framework designed to address workplace obesity in Oman's higher education sector through the integration of Social Cognitive Theory (SCT), Self-Determination Theory (SDT), and the Technology Acceptance Model (TAM). The framework aligns with Oman's Vision 2040 and UN Sustainable Development Goals such as UN SDG 3 (Good Health and Well-being), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production), which emphasize public health, workforce productivity, and sustainable consumption. It also responds to future market trends in the food and beverage and healthcare sectors, where digitalization, AI-driven nutrition tools, and personalized wellness platforms are transforming how organizations approach employee well-being. The conceptual synthesis suggests that enhancing employees' self-efficacy, autonomy, perceived usefulness, and workplace incentives may improve participation in digital nutrition initiatives. The study concludes that culturally adaptive and policy-integrated SDNE strategies can yield long-term health benefits and measurable productivity gains within Omani higher education institutions.

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## Keywords

Obesity, Sustainable Digital Nutrition Education, Social Cognitive Theory, Self-Determination Theory, Technology Acceptance Model

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## 1. Introduction

Obesity is defined as “abnormal or excessive fat accumulation that presents a risk to health” (World Health Organization, 2025). It is commonly measured using the Body Mass Index (BMI), where a BMI of 30 kg/m<sup>2</sup> or higher is classified as obese (Purnell, 2023). Obesity has emerged as a significant public health challenge in the modern era, particularly in regions undergoing rapid socio-economic transformations. This global health concern is closely linked to changes in dietary habits, reduced physical activity, and the increasing prevalence of sedentary work environments. While national workplace obesity statistics provide important context, this study specifically focuses on higher education institutions due to their unique organizational structures, sedentary work patterns, and policy environments.

Workplace obesity is a growing public health concern within Omani higher education institutions, particularly in regions experiencing rapid economic development and lifestyle shifts, such as Oman. According to the Oman Ministry of Health (2021), approximately 29% of the adult working population is classified as obese based on Body Mass Index (BMI  $\geq$  30 kg/m<sup>2</sup>). This represents an increase of approximately 6 percentage points compared to earlier national estimates reported in 2018. While these statistics reflect the general working population, they provide critical contextual evidence for understanding obesity risks within higher education workplace settings in Oman. These figures are derived from national health surveillance data and are not specific to higher education employees; however, they serve as a valid proxy for workplace-related obesity trends in Oman. In the context of Oman’s higher education sector, where faculty, administrative staff, and support personnel spend prolonged hours in office-based work, the link between workplace culture, dietary behaviors, and obesity becomes particularly evident (Tabak et al., 2015). Institutional cafeterias, office breakrooms, and vending machines play a significant role in shaping dietary habits, while social eating practices, such as group dining and celebratory events, reinforce shared norms around food (Oliveira et al., 2024). Despite growing awareness of the health risks associated with obesity, many employees struggle to make healthier dietary choices within the workplace environment, often citing limited time, convenience, and the influence of social norms as barriers (Leung et al., 2018).

Moreover, SDNE has emerged as a promising intervention strategy to combat workplace obesity within higher education institutions. In this study, SDNE adoption is defined as the initial acceptance and uptake of digital nutrition education tools by employees within higher education workplaces, reflecting their decision to use such platforms based on perceived value and usability. It is important to

distinguish SDNE adoption from related constructs. While adoption refers to the initial decision to use digital nutrition tools, engagement reflects the depth and frequency of user interaction with these tools. Continued use refers to the sustained, long-term utilization of such platforms over time. In contrast, health and productivity outcomes represent the eventual consequences of adoption and usage, such as improved dietary behavior, reduced absenteeism, and enhanced work performance (Zhang et al., 2014). This study specifically conceptualizes adoption as the primary dependent variable, while recognizing that engagement and continued use may follow adoption, and outcomes emerge subsequently. By leveraging digital technologies such as mobile health applications, interactive platforms and AI-driven dietary recommendations, SDNE offers personalized, scalable, and context-sensitive solutions for promoting healthier eating habits (Guan et al., 2023). Unlike traditional face-to-face health education programs, digital nutrition platforms provide continuous, real-time support, enabling employees to monitor their dietary choices, receive tailored feedback, and engage with health-promoting content at their convenience (Hutchesson et al., 2015).

Existing studies on Digital Nutrition Education (DNE) and workplace wellness rely on discrete theoretical frameworks such as Social Cognitive Theory (SCT), Self-Determination Theory (SDT), and Technology Acceptance Theory (TAT), each addressing isolated aspects of behavioral, motivational, or technological adoption. However, these models remain unintegrated, lacking a unified conceptual framework that synthesizes their core constructs. This fragmentation limits their explanatory power, particularly in complex workplace environments like those in Oman, where institutional policies, cultural eating norms, and digital literacy intersect. The absence of a cohesive, interdisciplinary model combining constructs such as self-efficacy, autonomy, and perceived usefulness with emergent workplace variables underscores the need for a comprehensive, context-sensitive framework tailored to the adoption and sustainability of SDNE in Omani higher education workplaces.

The phenomenon of workplace obesity in Oman, particularly in the higher education sector, has been problematized through the triangulation of observations, stakeholder interviews, and grey literature analysis, demonstrating that dietary habits, workplace culture, and the underutilization of digital nutrition tools collectively contribute to the challenge. However, transforming this phenomenon into a researchable problem requires a deeper examination of existing gaps in the literature, theory, methodology, and context.

## 2. Literature Review

The theories that have been identified in the literature are behavioral change theories, particularly Social Cognitive Theory (SCT) and Self-Determination Theory (SDT). These theories emphasize that self-efficacy, autonomy, and social reinforcement play vital roles in shaping individual health behaviors. In the workplace, these constructs are moderated by organizational culture, peer influence, and manage-

rial support (Bogale & Debela, 2024). Studies applying SCT in workplace wellness programs (Lazarević & Lukić-Nikolić, 2021) highlight the importance of colleague encouragement and positive reinforcement in driving sustained dietary changes. Similarly, SDT-based research (Deci et al., 2017) emphasizes that employees are more likely to engage with wellness initiatives when they perceive autonomy in choosing how and when to participate.

### 2.1. Social Cognitive Theory (SCT)

SCT, developed by Albert Bandura in 1986, explains how individuals learn and adopt behaviors through observation, imitation, and social interactions. The theory emphasizes that human behavior is shaped by the continuous interaction between personal factors, environmental influences, and behavioral patterns, a concept known as reciprocal (Szczytko et al., 2018). Unlike earlier behaviorist theories that focused solely on reinforcement and punishment, SCT highlights the role of cognitive processes, such as self-efficacy, motivation, and observational learning, in influencing behavior. This makes the theory particularly useful in studying behavior change in health, education, and workplace interventions (Islam et al., 2023).

Moreover, this theory has been widely used in various fields, particularly in health promotion (Bandura, 2004; Adhikari et al., 2019; Bagherniya et al., 2018; Beauchamp et al., 2019), workplace wellness programs (Röttger et al., 2017), and digital health interventions such as mobile health (mHealth) applications and AI-driven platforms that provide personalized feedback and virtual coaching to enhance self-efficacy and behavior change (Joseph et al., 2023). In public health, it has been applied to encourage individuals to adopt healthier lifestyles by using role models, social support, and environmental changes. For example, anti-smoking campaigns and physical activity programs often rely on SCT principles to influence behavior (Kumar & Preetha, 2012).

In the workplace, SCT has been used to develop corporate wellness programs, focusing on how employees learn and adopt healthy behaviors through peer influence, social norms, and environmental factors (Blaakman et al., 2022).

### 2.2. Self-Determination Theory (SDT)

SDT was developed by Edward Deci and Richard Ryan in 1985, this is a psychological framework that explains human motivation and behavior (Deci et al., 2017). The theory posits that individuals are driven by intrinsic and extrinsic motivation, and their ability to sustain behaviors depends on the fulfillment of three basic psychological needs, i.e., autonomy, competence, and relatedness. The first psychological need for autonomy refers to a person's ability to make their own choices and feel in control of their actions (Patrick & Williams, 2012). The second need is competence, which involves the feeling of being effective and capable of achieving desired outcomes, while relatedness, the third need, is the sense of connection and social belonging (Ntoumanis et al., 2020).

Furthermore, this theory has been extensively applied in health behavior change, workplace motivation, and digital interventions. In health promotion, SDT has been used to design physical activity programs, weight management interventions, and digital health tools that encourage individuals to sustain long-term healthy behaviors. Studies have shown that when individuals feel in control of their health choices (autonomy), believe in their ability to achieve health goals (competence), and receive support from their social environment (relatedness), they are more likely to maintain healthier habits (Ahn & Kim, 2022; Manganeli et al., 2018).

In higher education workplace settings, SDT has been used to enhance employee wellness programs and digital health interventions. Employers who create environments that foster autonomy (allowing employees to set their own wellness goals), competence (providing training and resources), and relatedness (encouraging peer support and collaboration) have seen higher engagement and long-term participation in workplace wellness programs (Wang et al., 2021). Additionally, SDT has been widely implemented in digital learning and mobile health (mHealth) applications, where users engage more when they have personalized experiences, gamified elements, and social support that satisfy these three psychological needs.

### **2.3. Technology Acceptance Theory (TAT)**

TAT, also known as the Technology Acceptance Model (TAM), was developed by Fred Davis in 1989 to explain how individuals adopt and use new technology. This theory is grounded in the assumption that users' perceptions of technology's usefulness and ease of use influence their intention to adopt it (Opoku & Enu-Kwesi, 2020). In this theory, two primary factors determine an individual's likelihood of adopting a technology, i.e., perceived usefulness and perceived ease of use, they directly impact Behavioral Intention (BI), which in turn influences actual technology adoption (Wicaksono & Maharani, 2020). In essence, if an employee finds a digital tool both beneficial and easy to use, they are more likely to engage with it consistently (Alsyouf et al., 2023).

This theory has been widely applied in diverse fields, particularly in healthcare, workplace wellness programs, and digital learning. In healthcare, TAT has been used to assess the adoption of Electronic Health Records (EHRs), telemedicine platforms, and mobile health applications, with studies indicating that perceived usefulness significantly impacts healthcare professionals' willingness to integrate these technologies into their practices (Muscat Daily, 2026). Similarly, in corporate wellness initiatives, TAT has been instrumental in evaluating employee engagement with AI-driven nutrition and fitness applications designed to improve workplace health outcomes.

### **2.4. Theoretical Integration and Moderating Mechanisms**

The integration of Social Cognitive Theory (SCT), Self-Determination Theory (SDT), and the Technology Acceptance Model (TAM) provides a comprehensive founda-

tion for understanding SDNE adoption within higher education workplaces. Each theory contributes a distinct but complementary perspective. SCT explains behavior through self-efficacy and social learning processes, highlighting how individuals gain confidence in performing health-related behaviors. SDT focuses on intrinsic motivation, emphasizing autonomy and the psychological needs that sustain behavioral intention. TAM, in contrast, explains how users evaluate and adopt digital technologies based on perceived usefulness and ease of use.

While each theory independently explains specific aspects of behavior or technology use, their integration enables a more holistic understanding of digital nutrition education adoption, which inherently involves behavioral change, motivational drivers, and technology acceptance. In the context of SDNE, employees must not only be motivated (SDT) and confident in their abilities (SCT), but also perceive the digital tools as useful and accessible (TAM). Therefore, combining these theories allows the model to capture the multi-dimensional nature of adoption within workplace environments.

In addition to the core independent variables derived from these theories, contextual factors such as social influence, social support, and perceived fairness of incentives are conceptualized as moderating variables rather than direct predictors. These factors do not independently drive adoption but instead shape the strength and direction of relationships between the independent variables and SDNE adoption. For example, social support can strengthen the impact of self-efficacy on adoption, while perceived fairness of incentives may influence how autonomy translates into behavioral intention. Similarly, social influence may enhance or weaken the effect of perceived usefulness on adoption depending on workplace culture.

Treating these variables as moderators reflects their contextual and conditional role within organizational environments, where social dynamics and institutional practices influence how individual-level factors translate into actual adoption behavior.

Despite the extensive application of SCT, SDT, and TAM in health behavior and technology adoption research, existing studies largely examine these frameworks in isolation. Moreover, limited attention has been given to their integration within workplace-based digital nutrition interventions, particularly in the context of higher education institutions in Oman. This fragmentation highlights the need to identify specific gaps in the literature, which are discussed in the following section.

### 3. Research Gap

Although research on obesity and digital health interventions in Oman is expanding, the integration of SDNE into Omani higher education workplaces remains limited. These gaps demonstrate that the current body of knowledge is insufficient to address the contextual complexities of workplace obesity in Oman, thereby justifying the originality and necessity of this research. The literature indicates that a comprehensive, theory-driven framework tailored to higher education workplace

settings has yet to be developed.

This research aims to develop a proposed conceptual framework for a SDNE to combat workplace obesity in Oman by integrating behavioral, technological, and incentive factors. Focusing on self-efficacy, autonomy and perceived usefulness, the study seeks to identify key determinants influencing the adoption, engagement, and effectiveness of digital nutrition education in higher education workplace settings. There is a lack of consistency in the theories identified from various disciplines in literature.

Addressing these gaps requires a structured methodological approach that integrates theoretical insights with contextual evidence. Accordingly, the following section outlines the descriptive-deductive methodology employed to develop the proposed conceptual framework.

#### **4. Research Methodology and Design**

The descriptive-deductive approach was used in this study. This is a methodological framework used in conceptual and theoretical research. It combines descriptive analysis, which explores and contextualizes a research problem, with deductive reasoning, which applies existing theories to derive logical conclusions and propose solutions (Edgar & Manz, 2017). The descriptive-deductive approach consists of two interconnected phases. The first phase is descriptive phase, this stage focuses on thoroughly analyzing the research problem, presenting existing evidence from multiple sources, and providing a comprehensive context for the study. Whereas the other phase is deductive phase, in this phase, it moves from description to theory application, drawing logical conclusions from established theories and empirical findings to propose a new conceptual model.

The descriptive phase of the approach provides the researcher with an opportunity to provide the reader with a detailed description of the research problem (Balasundaram & Daley, 2025). It also stimulates the researcher to collect as much quality data as possible to substantiate the existence of the problem from multiple viable resources (such as grey literature, stakeholders' perceptions and published research).

In the deductive phase, established theories were analyzed in detail, historicized, and contextualized in relation to previous research (Fife & Gossner, 2024). Additionally, the study develops assumptions based on the selected theories, which serve as a foundation for the proposed conceptual model. The contextual scope of this conceptual study is limited to Omani higher education institutions, which serve as the primary unit of analysis for examining SDNE adoption. It is important to note that this study does not involve empirical testing; rather, the proposed relationships are derived from theoretical integration and conceptual synthesis of existing literature.

To support the development of the conceptual framework, multiple sources of evidence were purposively considered. Peer-reviewed academic literature was selected based on relevance to digital health interventions, workplace wellness, and

behavioral and technology adoption theories, and was used to identify core theoretical constructs such as self-efficacy, autonomy, and perceived usefulness. Grey literature, including policy reports and national health publications (e.g., Ministry of Health, Oman), was incorporated to provide contextual insights into obesity trends and workplace health priorities in Oman. In addition, informal stakeholder insights, including perspectives from employees and institutional actors within higher education settings, contributed to identifying organizational factors such as workplace incentives and support mechanisms. Observations of workplace environments, including dietary practices and institutional facilities, were used to contextualize behavioral patterns and reinforce the relevance of selected variables. Together, these sources informed the selection and integration of variables within the proposed conceptual framework.

## 5. Proposed Conceptual Framework

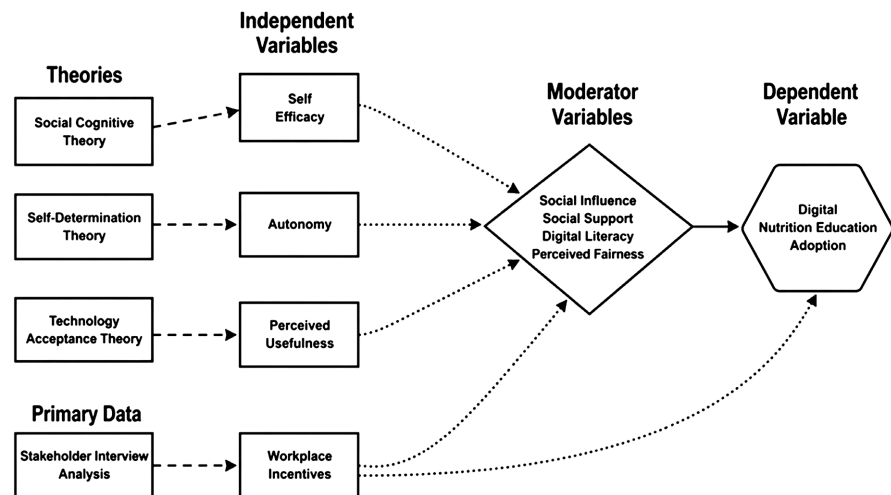
The following framework represents a set of theoretically derived propositions rather than empirically tested relationships. This conceptual framework is designed to address the research problem by constructing relationships between key Independent Variables (IVs), derived from established theories, stakeholder perceptions, grey literature, and personal observations, and the Dependent Variable (DV), which represents the desired outcome of digital nutrition education adoption within Omani higher education workplaces. The framework integrates behavioral, technological, and organizational perspectives to create a sustainable and effective workplace wellness intervention. **Figure 1** below shows the identified independent, moderator and dependent variables derived from all three theories. The IVs included:

- 1) Self-Efficacy (Derived from Social Cognitive Theory—SCT)
  - Employees' confidence in their ability to engage with digital nutrition tools, make informed dietary decisions, and maintain long-term behavior change.
  - High self-efficacy leads to greater motivation and adherence to digital health interventions.
- 2) Autonomy (Derived from Self-Determination Theory—SDT)
  - The degree to which employees feel in control of their dietary choices and engagement with digital nutrition platforms.
  - Employees who perceive greater autonomy are intrinsically motivated, making them more likely to adopt and sustain digital nutrition education.
- 3) Perceived Usefulness (Derived from Technology Acceptance Theory—TAT)
  - Employees believe that using digital nutrition tools will improve their dietary habits, health, and workplace well-being.
  - If employees see clear benefits, they are more likely to engage with digital nutrition programs.
- 4) Workplace Incentives (Derived by Stakeholder Interviews and Observations)
  - Organizational rewards, recognition programs, and employer-subsidized wellness initiatives that encourage participation in digital nutrition edu-

cation.

- Extrinsic motivation reinforces engagement, complementing intrinsic drivers like autonomy and self-efficacy.

The DV included the SDNE adoption, defined as the initial acceptance and uptake of digital nutrition education tools by employees within higher education workplaces to improve dietary behaviors and workplace well-being. Engagement and continued use are treated as post-adoption behavioral processes, while health and productivity improvements are considered downstream outcomes rather than components of adoption itself.



**Figure 1.** Proposed conceptual framework.

## 6. Conceptual Propositions

This section presents the outcomes of the conceptual analysis in the form of theoretically derived relationships and an integrated framework explaining SDNE adoption within Omani higher education workplaces. Consistent with the descriptive-deductive design, these results are not empirically tested but are derived from the synthesis of established theories (SCT, SDT, TAM), supported by contextual insights from literature, grey literature, stakeholder perspectives, and workplace observations.

The conceptual synthesis results in an integrated model in which SDNE adoption is positioned as the primary dependent variable, defined as the initial acceptance and uptake of digital nutrition education tools by employees within higher education workplaces. The model identifies four key independent variables, such as self-efficacy, autonomy, perceived usefulness, and workplace incentives—representing behavioral capability (SCT), intrinsic motivation (SDT), and technology evaluation (TAM), complemented by organizational drivers.

In addition, contextual variables such as social support, social influence, and perceived fairness of incentives are specified as moderators that condition the strength and direction of relationships between the independent variables and SDNE adoption. These moderating mechanisms reflect the organizational and socio-cultural

context within which individual-level determinants operate.

The conceptual results distinguish SDNE adoption from subsequent processes and outcomes. Engagement (depth and frequency of interaction) and continued use (sustained utilization over time) are treated as post-adoption behavioral processes, while health and productivity improvements (e.g., dietary change, reduced absenteeism, enhanced performance) are considered downstream outcomes. These are not modeled as components of adoption but as consequences that may follow successful uptake.

Based on the integrated framework, the following propositions are derived:

- Proposition 1: Self-efficacy positively influences SDNE adoption within Omani higher education workplaces.

Rationale: Individuals with higher confidence in their ability to use digital tools and manage dietary behavior are more likely to initiate adoption (SCT).

- Proposition 2: Autonomy positively influences SDNE adoption by enhancing intrinsic motivation.

Rationale: When employees perceive control over their participation, they are more inclined to adopt health-related digital interventions (SDT).

- Proposition 3: Perceived usefulness positively influences SDNE adoption.

Rationale: Employees are more likely to adopt digital nutrition tools when they believe such tools improve health and work-related outcomes (TAM).

- Proposition 4: Workplace incentives positively influence SDNE adoption.

Rationale: Extrinsic motivators (e.g., rewards, recognition, subsidized programs) reinforce initial uptake alongside intrinsic drivers.

Collectively, the propositions indicate that SDNE adoption in higher education workplaces is a multi-dimensional phenomenon shaped by the interaction of behavioral capability, intrinsic motivation, technology evaluation, and organizational incentives, contingent upon social and institutional context. The model provides a structured basis for future empirical validation using quantitative or mixed-method approaches and offers a theoretically grounded pathway for designing workplace nutrition interventions aligned with Oman Vision 2040 and the UN SDGs.

## 7. Situating the Framework

The proposed SDNE framework is conceptually aligned with Oman's Vision 2040 and the UN Sustainable Development Goals (SDGs 3, 8, and 12), recognizing that workforce health and productivity are central to national sustainability. By integrating behavioral, technological, and organizational variables, the framework extends beyond conventional wellness models to connect digital nutrition education with future market dynamics in the F&B and healthcare industries.

In the F&B sector, the model complements emerging trends toward personalized nutrition, AI-driven dietary tracking, and smart canteen solutions, promoting responsible consumption and data-based menu optimization in workplace cafeterias. In the healthcare industry, it supports the digitalization of preventive health strategies by enabling continuous engagement through mobile and web-based health

platforms, which reduce non-communicable disease risks and strengthen preventive care systems.

The model's emphasis on employee self-efficacy, autonomy, perceived usefulness, and workplace incentives not only enhances dietary behavior but also generates measurable productivity gains. Healthier dietary habits contribute to reduced absenteeism, improved concentration, and greater work efficiency outcomes directly aligned with Vision 2040's focus on a capable and competitive workforce. By integrating behavioral motivation (SCT and SDT), technology adoption (TAM), and organizational support mechanisms, this framework establishes a sustainable pathway for improving both workplace wellness and economic performance in Oman.

While many existing models rely on a single theory, such as the TAT for technology adoption or the Health Belief Model (HBM) for behavior change, this framework combines multiple perspectives, including SDT, SCT, TAT, workplace incentives, and stakeholder insights. This multi-theory approach makes the framework more comprehensive and adaptable to diverse workplace environments, ensuring that it effectively addresses both individual and organizational factors influencing digital nutrition education adoption.

Furthermore, a key advantage of this model is its strong cultural relevance, particularly in the Omani context. Unlike global workplace wellness models that may not fully account for local socio-cultural and institutional factors, this framework is tailored based on stakeholder input and workplace dynamics specific to Oman. This customization increases feasibility, enhances acceptance, and ensures that the interventions align with employees' needs, expectations, and workplace realities.

Despite its advantages, the proposed conceptual framework faces several challenges and limitations that could impact its effectiveness. One key challenge is its dependence on workplace culture, as successful implementation requires strong organizational leadership and active support for digital health initiatives. If employers do not prioritize workplace wellness or fail to foster a supportive environment, employee engagement with digital nutrition education may remain low, limiting the framework's overall impact.

Another potential barrier is the variation in digital literacy among employees. While some may readily adapt to digital nutrition platforms, others with limited digital proficiency may struggle to engage effectively. This necessitates additional training and support mechanisms, which could increase the complexity and cost of implementation. Without adequate resources to bridge this gap, digital exclusion may reduce the framework's effectiveness for certain employee groups. The main principles of the proposed conceptual model:

- 1) Behavioral Motivation—The model integrates SDT and SCT to emphasize self-efficacy, autonomy, and social support as key drivers of digital nutrition education adoption.

- 2) Technology Adoption—TAT is used to ensure that employees perceive digital nutrition platforms as useful, easy to use, and effective in improving their dietary

habits.

3) Workplace Influence—Unlike existing models, this framework recognizes workplace incentives as a key driver, emphasizing employer-led policies, wellness programs, and financial incentives to enhance engagement.

4) Social & Organizational Support—Social Influence and Perceived Fairness of Incentives act as moderators, ensuring that workplace culture fosters peer support, inclusivity, and fairness in digital health adoption.

5) Sustainability & Long-Term Engagement—The model prioritizes long-term behavior change by integrating intrinsic motivation, external incentives, and a supportive work environment.

## 8. Recommendations and Future Studies

This paper proposes a culturally grounded and policy-aligned conceptual framework for implementing SDNE in Omani higher education institutions. By addressing behavioral, technological, and organizational factors, the model directly supports Oman Vision 2040 and UN SDGs 3, 8, and 12, advancing goals of improved health, responsible consumption, and workforce productivity. It provides a blueprint for integrating digital nutrition interventions into institutional wellness policies, particularly in higher education and service-oriented industries.

The framework's relevance extends to future market trends in the food and beverage and healthcare sectors, where digital transformation is redefining how nutrition, wellness, and employee performance are managed. Implementing SDNE can yield dual benefits: enhancing public health while generating economic value through higher labor productivity and reduced healthcare costs.

Based on insights derived from conceptual synthesis of literature, supported by observations, stakeholder perspectives, and grey literature, and the critical review of theoretical and empirical literature, this study proposes several practical, policy-oriented, and culturally adaptive recommendations to facilitate the successful implementation of SDNE in Omani higher education workplaces. These recommendations aim to bridge the gap between national health objectives, institutional wellness policies, and employee engagement, ensuring that digital nutrition education is not only accessible but also relevant, engaging, and sustainable.

Second, institutions should invest in digital literacy training tailored to health technologies, ensuring that all employees, regardless of age, position, or technical proficiency, can confidently navigate digital nutrition platforms. This training should go beyond technical skills to emphasize the personal and professional value of engaging with digital nutrition tools, helping employees connect health tracking to their personal well-being and professional productivity. Such training would enhance employees' perceived competence, a core element of SDT, while also addressing TAT's focus on perceived ease of use.

Future research should conduct pilot studies to implement digital nutrition education programs across diverse workplace environments in Oman, including industrial workplaces. These studies should assess employee engagement levels across

different job roles and industries, evaluate the effectiveness of workplace incentives in promoting sustained participation, and identify challenges such as digital literacy gaps, organizational resistance, and cultural adaptation of digital nutrition solutions. Additionally, comparative analysis across sectors can help determine which higher education workplace settings benefit the most from such interventions. By testing the conceptual framework in real-world scenarios, researchers can refine key variables, adjust moderating factors, and enhance strategies to improve long-term engagement with digital nutrition education.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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