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Determinants of food security among employees of micro, small, and medium enterprises (MSMEs) in Thailand

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Abstract The findings revealed that the overall food security status was high. Among the four dimensions, food utilization ranked the highest, followed by food availability and food access, while food stability was slightly lower, indicating some vulnerability in long-term food access. In addition, the results from multiple regression analysis indicated that work experience, ethnicity, educational attainment, job position, average monthly income, and average monthly savings had statistically significant effects on the level of food security. Regarding potential strategies, promoting understanding among employees' family members and encouraging income and resource sharing were rated at a high level. In contrast, self-reliance, mutual support, and the development of individual resilience were assessed at a moderate level.

Keywords: Food security, Micro, Small and medium enterprises (MSMEs), Employees

Introduction

The COVID-19 pandemic was among humanity's greatest catastrophes, profoundly impacting populations worldwide through widespread infection (United Nations, n.d.). The pandemic severely affected lives, assets, and livelihoods, precipitating a global economic downturn that halted more than three decades of progress in poverty alleviation (Galanakis, 2020). Nearly 90 million people experienced food insecurity within a single year from 2019 to 2020. Although 2021 witnessed a partial recovery from the pandemic-induced contraction, recovery trajectories varied markedly both across and within countries (FAO *et al*., 2021). The pandemic's economic, social, and psychological effects substantially altered people's living conditions (Agba *et al*., 2022), provoking economic and social disruptions that raised serious

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concerns about food security (Lakuma *et al*., 2023). Many micro, small, and medium enterprises (MSMEs) closed; reports indicate declines of 20–30% among such businesses in early 2020 (Azman *et al*., 2024), affecting livelihoods on multiple fronts. Lockdowns and restrictions on intercity travel led to job losses and reduced working hours, while restrictions on food imports and exports in some countries further exacerbated poverty.

Evidence indicated that more than 320 million additional people worldwide experienced food insecurity during the COVID-19 crisis (Galanakis, 2020). Poverty levels were projected to increase by 420–580 million people compared with the latest 2018 estimates (Sumner *et al*., 2020). International organizations raised an alarm about growing food insecurity driven by the pandemic. The COVID-19 crisis affected food security across seveal dimensions as food availability, constrained by travel and supply disruptions, food access, impaired by declines in gross domestic product (GDP) and rising unemployment, food utilization, reflected in diminished nutritional diversity and food stability, weakened by travel restrictions and global economic contraction.

In Thailand, the government has established proactive measures to promote food security. As reflected in the 12th Agricultural Development Plan (2017–2024) and the 13th National Economic and Social Development Plan (2023–2027), the Thai government prioritizes food and energy security (Office of Agricultural Economics, 2016). The National Food Committee has also articulated a strategic food management framework aimed at positioning Thailand as a leader in sustainable food security (National Food Committee, 2011). Therefore, such policies and strategies aim to mobilize all sectors, from the macro to the grassroots level, toward building a society that achieves the dimensions of food security.

The pandemic's severe socioeconomic impacts forced many MSMEs which increased unemployment (Chumthakob, 2020). Consequently, MSMEs adaptation to ensure food security is crucial. Some enterprises, such as TMD Tools Co., Ltd., and Somphat Engineering Co., Ltd., have incorporated the Sufficiency Economy philosophy into business operations (Rothomphiwat, 2019). During the crisis, the strategy involves conserving environmental resources, promoting local food production through crop cultivation, and encouraging resource exchange within communities. This approach enhances self-reliance and helps maintain employment stability by reducing the need for workforce layoffs.

As stated above, enhancing food security within MSMEs is an important crisis-response strategy to protect employees' welfare, generate employment, and maintain adequate incomes and working conditions, thereby guaranteeing basic food security and workplace safety. Therefore, this study aims to

investigate the determinants of food security among employees of MSMEs in Thailand. The findings of this study will serve as an important guideline for proposing approaches to achieving food security to enhance employees' well-being in the future.

Materials and methods

Population in the study

The population for this study comprised employees of two micro, small, and medium enterprises (MSMEs) implementing activities to promote employee food security. These included TMD Tools Co., Ltd. in Phanat Nikhom District, Chonburi Province, and Somphat Engineering Co., Ltd. in Mueang District, Maha Sarakham Province, for a total population of 175. Given the manageable size of the population, a census approach was used, and all members of the population were included in the study.

Research instruments

The research instrument was a questionnaire divided into three sections:

Part I: General information of respondents.

Part II: Food security. This section assessed employees' food security levels using a 5-point rating scale based on the Likert scale.

Part III: Approaches to promoting food security. This section explored employees' approaches to food security within the MSMEs context, also using a 5-point rating scale.

The questionnaire underwent expert review by three specialists. Items were retained only if they achieved an Index of Item-Objective Congruence (IOC) of 0.50 or higher. The results of the expert evaluation using the IOC index revealed that all questionnaire items obtained IOC values higher than 0.5. Therefore, the developed research instrument demonstrated good content validity. After that, the questionnaire was then pilot tested with 30 employees at WN Industry Co., Ltd. in Samut Prakan Province, a company outside of the study population. Reliability was assessed using Cronbach's alpha coefficient (Cronbach, 1951), resulting in a reliability coefficient of 0.844, which was deemed satisfactory for data collection in this study (Nunnally and Bernstein, 1978). Therefore, it can be concluded that the research instrument used in this study demonstrated both good validity and reliability and was suitable for further data collection.

Data analysis

Data were analyzed using both descriptive statistics and multiple regression. Descriptive statistics included frequency, percentage, mean, and standard deviation. Multiple regression analysis was used to identify factors influencing employee food security. To examine the factors influencing the food security of employees in MSMEs, the following predictive equation will be used:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_8 X_8 + \varepsilon$$

where:

Y = the level of food security

X_1 = sex (reference group: female)

X_2 = years of employment (reference: less than 11 years)

X_3 = nationality/ethnicity (reference: Thai)

X_4 = education (unit: years of schooling)

X_5 = family size (reference: 1-3 persons)

X_6 = job position (reference group: non-permanent)

X_7 = average monthly income (reference: less than and equal to 15,000 Thai Baht)

X_8 = average monthly savings (reference: less than or equal to 1,000 Thai Baht)

β_0 = constant term of the regression equation

$\beta_1, \beta_2, \ldots, \beta_8$ = regression coefficients

ε = error term of the regression model

Results

Socio-demographic backgrounds of respondents

The socio-demographic and economic characteristics of the respondents are presented in Table 1.

The respondents were predominantly male (52%), which reflected the physical demands associated with the nature of the work or the industry context. In terms of work experience, most employees had a moderate level of tenure, with 41.1% worked for 5–10 years, indicating a relatively stable workforce and a reasonable level of adaptation to organizational culture and work processes.

The majority of respondents were Thai nationals (52%) and possessed a basic level of education, with 70.9% having completed primary education (Grade 6) to lower secondary education. Regarding household characteristics, most employees reported small household sizes, with 78.3% living in households of

one to three members, which corresponded with relatively lower household consumption demands.

In terms of employment status, the majority of respondents held permanent positions (86.3%), indicating a relatively high level of job security within the sampled enterprises. Monthly income was most commonly reported in the range of 16,000–20,000 Baht (40.6%), while monthly savings typically ranged from 2,001–3,000 Baht (37.1%). These figures indicated that many employees possessed sufficient income to meet basic living expenses while maintaining a modest level of financial savings, which contributed positively to household food security.

Nevertheless, the appropriated income management and savings planning remained important considerations for buffering against potential future fluctuations in income and living expenses. Overall, these socioeconomic characteristics provided important insights that could assist organizations in developing policies and support mechanisms aimed at enhancing food security among different groups of employees.

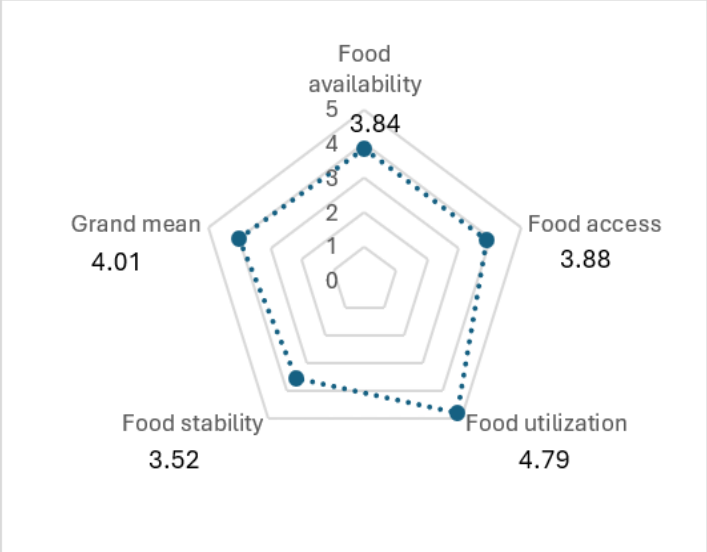
Table 1. General information of respondents

Variables	Frequency	Percent
Sex		
Male	91	52.0
Female	84	48.0
Work experience (unit: years)		
< 5 years	28	16.0
5 - 10 years	72	41.1
11 - 20 years	41	23.4
> 20 years	34	19.4
Nationality/ethnicity		
Thai	91	52.0
Loas	43	24.6
Myanmar	29	16.6
Cambodia	12	6.9
Education		
Lower secondary and lower	124	70.9
Upper secondary	31	17.7
Higher vocational diploma	10	5.7
Bachelor's degree	7	4.0
Postgraduate degree and above	3	1.7
Family size (unit: persons)		
1 - 3	137	78.3
4 - 6	35	20.0
7 and above	3	1.7

Variables	Frequency	Percent
Job Position		
Permanent Staff	151	86.3
Technician	5	2.9
Office Staff	9	5.1
Supervisor	4	2.3
Department Manager	4	2.3
Manufacturing Manager	2	1.1
Average monthly earnings (unit: Thai Baht)		
≤ 15,000	34	19.4
15,001 - 20,000	71	40.6
20,001 -30,000	60	34.3
> 30,000	10	5.7
Average monthly savings (unit: Thai Baht)		
≤ 1,000	17	9.7
1,001 – 2,000	57	32.6
2,001 – 3,000	65	37.1
> 3,000	36	20.6

The situation of food security among employees of MSMEs

Food security among MSMEs employees was found to be generally high, with an overall grand mean of 4.01 (Figure 1). However, notable variations existed across the four dimensions. Food utilization scored highest (M=4.79, SD=0.45), indicating that employees effectively utilized the available food resources to meet their nutritional needs. Both food availability (M=3.84, SD=0.56) and food access (M=3.88, SD=0.67) were also relatively high, falling within the high category. In contrast, food stability (M=3.52, SD=0.48) scored slightly lower, suggesting that employees may experience some level of vulnerability or instability in their access to food over time.



Note: 4.51-5.00 = very high, 3.51-4.50 = high, 2.51-3.50 = moderate, 1.51-2.50 = poor, and 1.00-1.50 = very poor

Figure 1. Level of food security among employees in MSMEs

Determinants of food security among employees of MSMEs

The regression model significantly predicted food security level among employees of MSMEs, accounting for 31.6% of the variance of food security level (Table 2). Several socio-economic variables emerged as key determinants.

Consistent with hypotheses, average monthly income and average monthly savings both had a statistically significant positive effect on the level of food security (b=5.525, p<.001; b=6.457, p=.002, respectively). These indicate that financial resources play a crucial role in enabling access to adequate and nutritious food, leading to food security.

Job position had a statistically significant effect on the level of food security (b=4.147, p=.049). Employees with permanent positions tended to have higher levels of food security than those with non-permanent positions. Similarly, work experience also had a statistically significant effect on the level of food security (b=4.206, p=.011). Employees with 11 years or more of work experience exhibited higher levels of food security than those with less than 11 years and above of experience. These findings reflect that job stability or security and the accumulation of work experience play a crucial role in enhancing employees' capacity to achieve food security.

In addition, nationality or ethnicity had a significant effect on employees' level of food security (b=-4.056, p=.002). Specifically, non-Thai employees (Laos, Myanmar, and Cambodia) exhibited lower levels of food security than Thai employees. These findings reflected inequalities in food security among employees, which may be associated with differences in individuals' capacity and ability to achieve food security.

Another interesting finding was that education had a negative effect on employees' food security (b=-4.035, p=.019). This reflects that higher education may draw individuals away from traditional food systems without necessarily improving their economic security in the short term. Therefore, a higher level of education may not necessarily guarantee a higher level of food security.

However, the findings revealed that sex and household size did not have any significant effect on employees' food security.

Table 2. Determinants of food security among employees of MSMEs

Variables	b	SE	B	t	p
Sex (ref.=female)	-0.680	1.107	-.040	-.614	.540
Work experience (ref.=less than 11 years)	4.206	1.632	.183	2.577	.011*
Nationality/Ethnicity (ref.=non-Thai)	-4.056	1.273	-.240	-3.186	.002**
Education	-4.035	1.698	-.218	-2.376	.019*
Family size (ref.=1-3 persons)	-1.822	1.401	-.089	-1.300	.195
Job position (ref.=non-permanent)	4.147	2.092	.169	1.983	.049*
Average monthly income	5.525	1.151	.322	4.800	<.001**
Average monthly savings	6.457	2.060	.214	3.135	.002**
Constant	83.116	2.469		33.659	<.001**

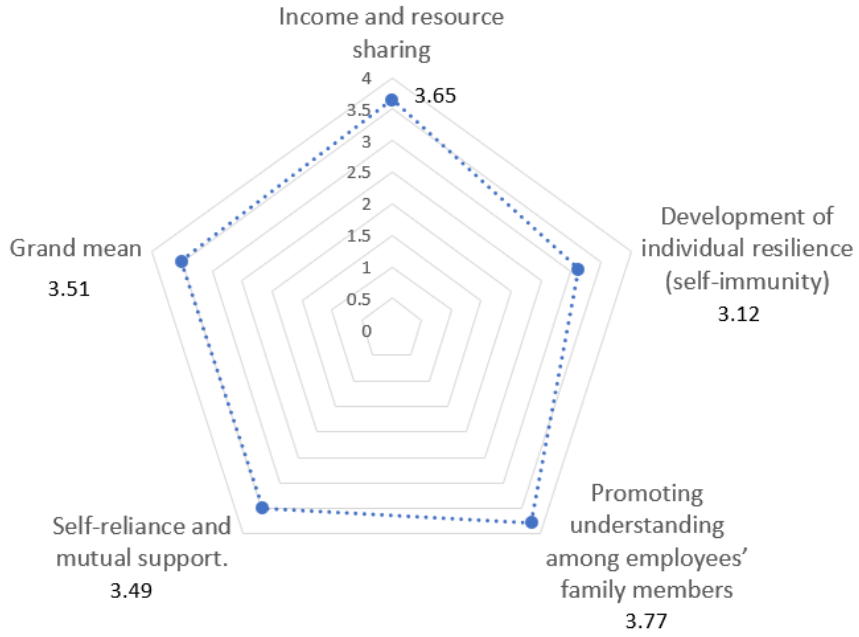
$R^2 = 0.316$; *p < .05; **p < .01

Approaches to enhancing food security among MSME employees

The approaches to enhancing food security among employees of MSMEs were examined across four key dimensions: (i) income and resource sharing, (ii) the development of individual resilience (self-immunity), (iii) promoting understanding among employees' family members, and (iv) self-reliance and mutual support.

The results indicated that the overall level of food security enhancement among MSME employees was at a high level, with a mean score of 3.51 (SD=0.35). When considering each dimension individually, two aspects were found to be at a high level, namely promoting understanding among employees' family members and income and resource sharing, with mean scores of 3.77 (SD=0.61) and 3.65 (SD=0.46), respectively. In contrast, self-reliance and mutual support and the development of individual resilience (self-immunity)

were rated at a moderate level, with mean scores of 3.49 (SD=0.58) and 3.12 (SD=0.64), respectively (Figure 2).



Note: 4.51-5.00 = very high, 3.51-4.50 = high, 2.51-3.50 = moderate, 1.51-2.50 = poor, 1.00-1.50 = very poor

Figure 2. Approaches to enhancing food security among employees of MSMEs

Discussion

The present study examined the determinants of food security among employees of MSMEs. The results of the multiple regression analysis revealed that income level, annual savings, work experience, job position, education level, and nationality/ethnicity significantly influenced food security, whereas gender and family size were not statistically significant predictors.

The findings indicated that socioeconomic and demographic factors played an important role in shaping food security among MSME employees. Among these factors, income and savings emerged as the most influential predictors, followed by work experience and job position. In contrast, education and ethnicity were found to have significant negative associations with food security, while gender and family size did not show statistically significant effects.

The strong positive influence of average monthly income and average monthly savings was consistent with the global literature, which highlighted household purchasing power and financial resilience as key determinants of food security (FAO *et al*., 2021; Smith and Frankenberger, 2018). Employees with higher income levels and greater financial savings were better positioned to access sufficient, safe, and nutritious food and were more capable of coping with food price fluctuations and economic shocks (Maxwell *et al*., 2014).

Work experience and job position were also positively associated with food security. These findings aligned with labor economics research suggesting that longer work tenure and higher occupational status were generally linked to greater employment stability and improved earnings, which subsequently enhanced individuals' capacity to secure adequate food (Headey and Ecker, 2013; Niles and Salerno, 2018).

However, the negative association between education and food security appeared counterintuitive. In most contexts, higher educational attainment was typically associated with improved employment opportunities and higher income levels (Dasgupta and Robinson, 2021). However, in the context of MSMEs, this relationship might have reflected the presence of underemployment or job–qualification mismatches. Highly educated employees working in MSMEs might have received wages that did not correspond with their qualifications or expectations, potentially leading to financial stress and reduced food security.

Nationality was also associated with food security, highlighting the vulnerability of migrant and minority workers. Previous studies documented that structural inequalities, limited access to social protection, and discriminatory practices often exacerbated food insecurity among migrant labor populations (Crush and Tawodzera, 2024; Wood *et al*., 2025).

Finally, the absence of significant effects for gender and family size suggested that these factors played a less critical role once economic conditions were considered. This finding was consistent with prior studies reporting that gender-based disparities in food access tended to diminish when employment status and income-related variables were controlled (Abbas *et al*., 2024; Bryan *et al*., 2023).

An important strategy for promoting food security was found to be the enhancement of understanding among employees' family members, as well as the encouragement of income and resource sharing. These mechanisms played a crucial role in strengthening household food security because cooperation and support within the family could improve a household's ability to access and manage food resources effectively. This finding was consistent with the study of Maxwell *et al*. (2014), which indicated that social networks, intra-household cooperation, and resource sharing played significant roles in enhancing

household food security, particularly among working households with limited income and resources.

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Conflicts of interest

The authors declare no conflicts of interest.

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