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By

Zeinab Amin Elsayed Khayal

Assistant professor, Management Department

Faculty of Business Administration and International Trade

Misr International University

zeinab.khayal@miuegypt.edu.eg

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How Does Negative Error Management Culture Fuel Job Insecurity Across Industries in Egypt?

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Abstract

This study explores how Negative error-management culture affects job insecurity (JI) across three key sectors in Egypt: Telecommunications, Education, and Oil / Gas. While all three sectors rely on skilled employees, the nature of their work and tolerance for errors differ. The research employed a standardized survey questionnaire to assess two key variables: Error Management Culture and job insecurity.

A stratified random sampling of employees was drawn from across three sectors: telecommunications, education, and gas/oil. The sample included both male and female respondents at all three managerial levels and the non-managerial employees. A total of 385 questionnaires were successfully distributed and returned by participants across various industry sectors, yielding a response rate of 80.6%.

Cronbach's Alpha was employed to assess the reliability of the questionnaires and it exceeded (0.60). The first hypothesis was tested by simple linear regression analysis (0.498) it was statistically significant.

ANCOVA analysis revealed a significant difference in how negative error-management culture impacts job insecurity across three sectors. It was seen that the effect of Negative error management culture on job insecurity was stronger in the petroleum sector, less in the education sector, and lower in the telecommunication sector.

Furthermore, the study emphasizes that a Negative Error management culture can lead to job insecurity, ultimately impacting employee morale and hence their performance.

Key Words: Error Management Culture; Job Insecurity; Oil/Gas; Education, Egypt

1. Introduction

In today's dynamic and competitive business environment, organizations are constantly striving for performance excellence (Barney (1991)). This pursuit often leads to increased pressure on employees to be error-free (Dewe (2008)), fostering an environment where errors are viewed negatively and associated with potential consequences like job insecurity (Kavanagh & Ashkanasy (2006)). However, this perspective overlooks the potential benefits of learning from mistakes and using them as opportunities for improvement (Argyris & Schön (1978)).

In recent decades, the labour market has experienced significant transformations due to the forces of globalization and international competition. Organizations have thus implemented a range of strategies to minimize expenses and enhance operational effectiveness, such as downsizing, restructuring, mergers, privatization, and outsourcing (Hellgren and Sverke, 2003; Allen et al., 2001). New types of employment relationships characterized by flexibility emerged from these transitions, leading to increasing worries among workers over job security (Sverke and Goslinga, 2003; Chirumbolo and Hellgren, 2003).

Error management culture refers to the shared values and beliefs within an organization regarding how mistakes are handled, learned from, and used for improvement. It encompasses how errors are perceived, responded to, and utilized for learning (Flin & Maran (2006)). This culture emphasizes addressing errors and their consequences constructively, rather than aiming for complete elimination (Frese et al. (1994)).

A positive error management culture encourages open communication about errors, and fosters a safe environment for reporting, and discussing them (Zohar (2010)), it emphasizes learning from mistakes rather than punishing them (Frese & Zapf, 1994).

Conversely, a negative error management culture is characterized by fear, blame, and a focus on punishment (Reason, 1990), discouraging employees from reporting errors (Vidal et al. (2016)) and hindering the organization's ability to learn from them (Frese & Zapf, 1994; Frese & Keith 2015). According to Cook & Render (2004) negative error management culture is characterized by blame and punishment and can fuel anxiety and job insecurity, hindering learning and innovation (Goodman et al. (2011)).

The concept of job insecurity can be characterized as a subjective sense of an individual's lack of control in maintaining the required level of job stability in a circumstance where their employment is at risk Greenhalgh & Rosenblatt (1984). Based on stress theory Lazarus & Folkman (1984), job insecurity is considered a stressor in the workplace. This is because the fear of potential job loss can be seen as a significant source of anxiety, which is equally significant as the actual loss itself.

Considering the issue of job insecurity, the attitudes of workers undergo transformations that might yield significant implications for their health and behavior (Davy, Kinicki, & Scheck 1991; Chirumbolo and Hellgren, 2003; Burke, 1998). Research has consistently shown that job insecurity negatively affects employees' attitudes, such as their job satisfaction and organizational commitment (Adkins, Werbel, & Farh, 2001; Chirumbolo & Hellgren, 2003; Armstrong-Stassen, 1993).

Another study has shown that job insecurity is strongly associated with lower job satisfaction and well-being, as well as a higher likelihood of leaving a job. According to (Rosenblatt, Talmud, and Ruvio, 1999; Chirumbolo and Hellgren, 2003) it is positively associated with employees' intention to leave the organization. However, some studies do not find such significant relationships (Davy, Kinicki, and Scheck, 1991; Hollenbeck and Williams, 1986; Cavanaugh and Noe, 1999). Greenhalgh and Rosenblatt (1984) proposed that variations among individuals could influence the connection between employment instability and the responses of individuals.

Moreover, Situational factors can also influence the perception of work instability as a greater or lesser threat, potentially impacting the severity of its effects. In this context, an individual's dependence on their current employment can be a significant situational factor Parker & Baillien (2019).

The research aims to investigate the phenomenon of negative error management culture and its effect on job insecurity specifically in the context of Egypt, the research focuses on three Egyptian sectors: Telecommunications, Education, and Gas/Oil. Each plays a vital role in a modern economy. Telecommunication networks keep information flowing Fu et al. (2014), education creates a skilled workforce

Hanushek & Woessmann (2010), and the gas/oil industry provides essential energy resources Yergin (2011). From teachers in education to engineers in gas/oil and network technicians in telecom, human capital is essential as these three sectors serve a huge customer or user base (Johnston & Lewin, 2015; James & James, 2014; Tverberg, 2012).

In telecommunications, complex networks are vulnerable to errors that can disrupt service for many people, studying error management can help identify weak points and create a culture of continuous improvement. In addition, the education sector presents a different challenge, teachers are under constant pressure to deliver results, but a punitive error culture, where mistakes are harshly penalized, can discourage them from trying new methods. Finally, Errors like blowouts in oil and gas, drilling, equipment malfunctions in production, or inadequate maintenance can all lead to environmental disasters like oil spills, financial losses due to clean-up and lost production, and endanger worker safety through explosions or exposure to hazardous materials. (Skogdalen et al.,2018).

1.1 Reason for choosing the Three sectors:

Education is strongly linked to the accumulation of human capital stock. It is strongly agreed that human capital is very crucial in promoting the technological base of economic sectors in general. Specifically, human capital and its contribution to the technological base are considered among the most important inputs to these sectors.

The energy sector relies on a skilled workforce trained in STEM (science, technology, engineering, and mathematics) fields, with educational institutions playing a vital role. Telecommunication infrastructure, though requiring significant energy itself, facilitates online learning platforms and educational resources, expanding access to education and fostering communication within the energy sector and educational institutions to a wider audience. These seemingly unrelated industries are interconnected. Education provides the workforce for the energy sector, while the energy sector supplies resources for education and telecommunication. Telecommunication in turn facilitates aspects of both education and the energy sector. Finally, all three sectors have a role to play in addressing environmental issues.

According to CAPMAS (Central Agency for Public Mobilization and Statistics 2022/2023), The oil and natural gas sector contributed approximately 20.4% to Egypt's Gross Domestic Product (GDP). The value of petroleum exports reached \$17.4 billion. The sector achieved a trade surplus of \$13.7 billion with 23.8 % of the total labour force. For those reasons, the petroleum sector is expected to remain one of the most important economic sectors in Egypt.

According to the Ministry of Education, the education sector contributed approximately 4.4% of Egypt's Gross Domestic Product (GDP) with 4.6 % of the total labour force. The value of government spending on education reached around 153 billion Egyptian pounds. The total number of students enrolled in all educational stages was approximately 24 million which is a very large number of the Egyptian population. The education sector is expected to remain one of the most important social sectors in Egypt.

Finally, The Information and Communications Technology (ICT) sector, which includes telecommunications, contributed approximately 5.1% to Egypt's Gross Domestic Product (GDP) in 2022/2023 with 3.9 % of the total labour force. The sector's revenue reached around 250 billion Egyptian pounds. The number of internet users reached approximately 54 million which is approximately half of the Egyptian population.

So, Understanding the impact of a negative error management culture within the interconnected sectors of energy, education, and telecommunication is critical for several reasons. Firstly, these sectors are not isolated entities. Errors in one can have cascading consequences across the others. A negative error management culture in the energy sector, where mistakes are met with blame rather than learning, could lead to equipment malfunctions, safety hazards, or even environmental disasters. These events could disrupt power supplies needed for educational institutions and telecommunication infrastructure.

Similarly, in education, a fear of making mistakes can stifle innovation and critical thinking in STEM fields. This hinders the very development of the skilled workforce the energy sector needs to operate safely and efficiently. Likewise, within telecommunication, a

culture that discourages reporting errors could lead to undetected network issues. These outages could then disrupt communication within the energy sector, impacting their ability to coordinate operations, and could also hinder access to online learning platforms used for education.

Secondly, a negative error management culture stifles innovation across all three sectors. Innovation thrives on experimentation and learning from mistakes. However, if employees fear being punished for errors, they become less likely to take risks or try new approaches. In the energy sector, this could mean continued reliance on traditional, polluting technologies rather than the development of cleaner, more efficient energy sources. In education, it could lead to an inert curriculum that fails to prepare students for the ever-evolving needs of the energy and technology sectors. Similarly, in telecommunication, a fear of errors could hinder the development of more efficient and accessible communication technologies.

Finally, all three sectors have a role to play in addressing environmental issues. A negative error management culture can hinder these efforts. In the energy sector, it could lead to a reluctance to adopt renewable energy sources or implement stricter safety measures. In education, it could prevent students from learning about sustainability and environmental responsibility. Within telecommunication, it could limit the development of energy-efficient communication technologies, leading to a larger carbon footprint from the industry.

1.2 Pilot Study

A pilot study was conducted to indicate the research problem. A convenience sample was used. The target sample size is 40 participants, divided proportionally across the three sectors. Closed Interviews were conducted, and the researcher asked the following questions to gain initial insights and pave the way for further investigation.

Table (1) pilot study questionnaire prepared by the researcher

No	Questions	Yes	No
1	Do you feel secure in your current job?	70%	30%
2	Have you experienced any recent organizational changes that have impacted your job security?	60%	40%
3	Do you feel job instability contributes to your feelings of job insecurity?	80%	20%
4	Do you believe a lack of clear communication from management about job security contributes to your feelings of job insecurity?	75%	25%
5	Do you think economic uncertainty contributes to your feelings of job insecurity?	70%	30%
6	Do personal performance concerns contribute to your feelings of job insecurity?	65%	35%
7	Has job insecurity affected your overall well-being?	85%	15%
8	Have you noticed any changes in your job performance or productivity as a result of feeling insecure in your job?	70%	30%
9	Do you have any additional comments or suggestions regarding job insecurity in the workplace? If yes state it -----.		

1.2.1 Results of the pilot study

1.2.1.1 Overall, Job Security Perception:

Among the respondents, 70% indicated that they do not feel secure in their current jobs, while only 30% reported feeling secure.

1.2.1.2 Impact of Organizational Changes:

60% of respondents reported experiencing recent organizational changes that have negatively impacted their job security. This suggests a correlation between organizational changes and perceptions of job insecurity.

1.2.1.3 Factors Contributing to Job Insecurity:

The majority of respondents (80%) identified job instability as a significant factor contributing to their feelings of job insecurity.

75% of respondents stated that a lack of clear communication from management about job security also contributes to their feelings of insecurity.

Economic uncertainty was highlighted by 70% of respondents as a contributing factor to their job insecurity.

Personal performance concerns were identified by 65% of respondents as contributing to their feelings of job insecurity.

1.2.1.4 Impact on Well-being and Performance:

85% of respondents indicated that job insecurity has negatively affected their overall well-being, suggesting a strong association between job insecurity and employee mental health.

Additionally, 70% of respondents reported noticing changes in their job performance or productivity because of feeling insecure in their jobs, indicating potential implications for organizational productivity and performance.

1.2.1.5 Additional Comments:

80% of respondents provided additional comments or suggestions regarding job insecurity in the workplace, expressing concerns about the need for more transparent communication from management, stability in organizational structure, and support for employees during times of change.

The analysis of survey responses suggests a significant presence of job insecurity among the respondents across the three sectors. Factors such as organizational changes, lack of communication, economic uncertainty, and personal performance concerns contribute to feelings of insecurity among employees. Moreover, job insecurity appears to have adverse effects on employee well-being and job performance. Addressing these concerns and implementing strategies to mitigate job insecurity could be beneficial for both employees and organizations in fostering a more stable and supportive work environment.

This research has been structured in a way that starts with the literature review which explores the theoretical background of error, error management culture, and its dimensions then moves to job insecurity and its impacts and causes as well as its dimensions moving to the relationship between error management culture and job insecurity. It also covered the research methodology, with the analysis of the data collected following the discussion and implications, as well as the conclusions and limitations of the research, which are addressed, and finally the future areas of research.

2. Literature review and hypotheses development

2.1 Error and Error Management

Errors are defined as “unintentional departures from objectives, norms, a code of conduct, the truth, or a genuine value” Senders & Moray (1991). Defining errors is complex, (Reason,1990; Zapf et al.,1992) and focuses on "action errors"; unintentional deviations from plans, objectives, or insufficient processing of feedback, leading to incorrect actions due to ignorance. March & Simon (1958) highlight limitations in human reasoning, where processing in unpredictable situations can lead to errors in selecting objectives.

Pure error prevention is insufficient given the inevitability and potential negative consequences of errors Reason (1990). Predicting the exact nature or timing of errors is often impossible. Moreover, focusing solely on prevention overlooks the potential benefits of learning from mistakes.

Organizational theorists distinguish between control and learning perspectives, both crucial for organizational longevity Sitkin et al. (1994). Research on error management culture supports this notion. Studies by (Frese,1995; Nordstrom et al.,1998) demonstrate that mistakes can facilitate learning, directly contradicting the error prevention control goal. Error management training further strengthens this link. (Heimbeck et al.,2003; Keith & Frese, 2005) found that engaging in metacognitive reflection on errors and experiencing less negative emotional impacts from mistakes can lead to learning.

While the idea of introducing potential, non-existent errors to gain knowledge might seem appealing March (1991), the lack of validity and absence of real consequences associated with such errors render this approach impractical Ivancic & Hesketh (2000).

Organizations can benefit from pursuing both control and learning objectives simultaneously. Error management serves as a valuable tool. From a control perspective, it focuses on swift error detection and damage control. Simultaneously, it fosters experimentation and exploration while utilizing errors as learning opportunities. This approach effectively resolves the inherent conflict between control and learning perspectives when allocating resources.

2.3 Error Management Culture

Building on the concept of organizational culture Klein, Dansereau, & Hall (1994), this analysis explores its application to error management. An organization's culture encompasses both shared practices and underlying values while acknowledging the challenge of disentangling societal and environmental influences Reichers & Schneider (1990), the focus here is the observable aspects of culture, aligning with the emphasis on customs and norms in cross-cultural psychology (House, R. J., Hanges, P. B., Javidan, M., Dorfman, P. W., & Gupta, V., 2004). There are two types of organizational culture, one that fosters a systematic and proactive approach to mistakes (Klamar, et al. 2021). This includes practices, procedures, and mindsets that prioritize error prevention alongside efficient methods for handling and mitigating inevitable errors. This concept closely aligns with research on safety and justice climates within organizations (Smith, Bradley, Ehrhart, & Bartunek, 2018; Johnson, 2016). A strong error management culture emphasizes differentiating between mistakes and their consequences and fostering a culture of learning and growth.

Research suggests that a robust error management culture can positively impact an organization's profitability, innovation, and safety (Johnson, 2016; Smith et al., 2018). While acknowledging external factors influencing performance (Klamar et al., 2021). the second is characterized by blame, fear of punishment, and a lack of open communication, which can have detrimental consequences that are known as a negative error management culture. Several studies highlight the negative effects of a culture that discourages open communication about errors.

Vaughan (1996) stated that how a culture that prioritized schedules and budgets over safety concerns ultimately led to catastrophe his study underscored the importance of open communication and addressing systemic issues rather than focusing solely on individual blame.

According to the researcher's understanding, we can conclude that:

Table (2) Definitions prepared by the researcher

Concept	Definition	Research Focus
Error	Unintentional deviations from plans, objectives, or insufficient processing of information leading to incorrect actions (Reason, 1990; Zapf et al., 1992). Limitations in human reasoning during unpredictable situations can also lead to errors in selecting objectives (March & Simon, 1958).	- How do limitations in human cognition and unpredictable situations contribute to errors?
Error Management	A strategy that acknowledges the inevitability of errors while focusing on both control and learning aspects (Sitkin et al., 1994).	- How can error management strategies balance control (error prevention and mitigation) with learning (utilizing errors for improvement)?
Learning from Errors	Research by Frese (1995) and Nordstrom et al. (1998) suggests that errors can facilitate learning, highlighting the importance of a learning-oriented error management approach.	- How can error management practices encourage reflection and positive emotional responses to errors, ultimately leading to learning?
Error Management Training	Studies by Heimbeck et al. (2003) and Keith & Frese (2005) demonstrate that error management training	- How can error management training programs be designed to promote metacognitive

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Concept	Definition	Research Focus
	focused on metacognition and reducing negative emotional responses can enhance learning from errors.	reflection and positive emotional responses to errors?
Organizational Culture	Shared practices and underlying values within an organization, with observable aspects like customs and norms playing a significant role (Klein, Dansereau, & Hall, 1994; House et al., 2004).	- How do observable cultural aspects (norms, customs) impact behaviors related to error management?
Positive Error Management Culture	A culture that emphasizes a systematic and proactive approach to mistakes (Klamar, et al. 2021). It prioritizes error prevention alongside efficient error handling and learning, differentiating between mistakes and consequences to promote growth (Smith et al., 2018; Johnson, 2016).	- How do specific practices and procedures within a positive error management culture encourage error prevention, reporting, and learning? - How does a positive error management culture differentiate between mistakes and consequences to promote growth?
Negative Error Management Culture	A culture characterized by blame, fear of punishment, and a lack of open communication, ultimately leading to negative consequences (Vaughan, 1996).	- How do cultural aspects like blame and fear of punishment discourage error reporting and open communication? - How does a negative error management culture hinder learning and improvement within an organization?

2.3.1 Fundamentals Negative Error Management Culture

2.3.1.1 Blame and Punishment: Organizations with a negative error management culture often focus on finding fault and punishing individuals who make mistakes. This creates a climate of fear and discourages employees from reporting errors Edmondson (1999).

2.3.1.2 Lack of Open Communication: Employees may be hesitant to report errors or near misses if they fear repercussions or lack trust in leadership's receptiveness as mentioned by O'Neill & Flin (2004). This hinders learning and prevents the identification of systemic issues.

2.3.1.3 Focus on Error Prevention Over Learning: A preoccupation with eliminating all errors fosters a culture of risk aversion. This can stifle innovation and prevent learning from mistakes, hindering long-term improvement Vaughan (1996).

2.3.2 Consequences of a Negative Error Management Culture

2.3.2.1 Reduced Learning and Improvement: When employees are afraid to report errors, valuable opportunities for learning and improvement are lost. Systemic problems remain undetected and continue to pose threats Reason (1997).

2.3.2.2 Decreased Employee Morale and Engagement: Fear of punishment and a lack of psychological safety can lead to decreased morale, disengagement, and higher employee turnover Zohar (2010).

Increased Risk of Accidents and Incidents: When errors go unreported or unaddressed, the risk of future accidents and incidents increases. This can have serious consequences for safety, productivity, and reputation Weick & Sutcliffe (2001).

Focus on Blame: A strong emphasis on error identification can lead to a blame culture, where individuals fear punishment for mistakes Vaughan (1996). This discourages open communication and reporting of errors, hindering learning opportunities Parker et al. (2017).

2.3.2.5 Risk Aversion: An overemphasis on error prevention can create risk-averse behavior Argyris (1990). Employees may avoid taking necessary risks for innovation or improvement for fear of making mistakes Sitkin & Pablo (1992).

2.4 Job Insecurity

Traditionally viewed as a motivator (via job security), the concept of job insecurity has undergone a significant shift. Since the 1980s, it has become recognized as a major stressor in the modern workplace (Greenlagh & Rosenblatt, 1984; Sverke et al., 2006; De Cuyper et al., 2008). Pioneering research by Greenlagh and Rosenblatt (1984) defined job insecurity as the "perceived powerlessness to maintain desired continuity in a threatened job situation." This definition emphasizes the subjective nature of job insecurity, highlighting how individual interpretations of the work environment shape feelings of vulnerability Sverke et al. (2006).

In essence, an employee's cognitive processes play a crucial role in translating objective threats into personal anxieties about job security. Two primary conceptualizations of job insecurity exist: global and multidimensional. The global view focuses solely on the threat of job loss and the associated uncertainty Kinnunen et al. (1999). Conversely, the multidimensional perspective encompasses not only the potential for job loss but also concerns regarding various job aspects, such as advancement opportunities and work schedule disruptions Mauno & Kinnunen, 2022.

These contrasting views are sometimes referred to as quantitative (global) and qualitative (multidimensional) insecurity Hellgren et al. (1999). Quantitative insecurity reflects the fear of job loss. In contrast, qualitative insecurity delves into potential declines in the quality of the employment relationship, encompassing factors like deteriorating work conditions, stagnant wages, demotions, and diminished career prospects Morris et al. (2017).

2.5 Impact of job insecurity

Job insecurity, the fear of losing one's position, carries significant negative consequences for both employees and organizations Silla et al. (2009). The swift transition from a stable work environment to one marked by rapid change and uncertainty can significantly impact employee well-being, attitudes, and behaviours Greenlagh & Rosenblatt (1984). These employee reactions, in turn, can create a ripple effect, ultimately hindering organizational effectiveness Hu et al. (2011).

Research has identified a cascade of detrimental effects stemming from job insecurity. Employees experiencing this fear tend to exhibit decreased trust and support from their organizations (Ashford et al., 1989; Rosenblatt & Ruvio, 1996; Ruvio & Rosenblatt, 1999). This diminished loyalty can lead to increased resistance to change (Ashford et al., 1989; Davy et al., 1997) and a heightened desire to leave the organization altogether. While objective work performance may not be directly affected, employees experiencing job insecurity often reported a decline in their perceived work performance Ruvio & Rosenblatt (1999).

2.6 Causes of Job Insecurity

It is essential to examine the potential contributors to the phenomena of job insecurity to comprehend it better. Experiences of job insecurity, whether they are qualitative or quantitative, result from the interaction of situational elements and personal qualities that influence how an individual interprets their surroundings. Three groups have been identified by researchers as the indicators of job insecurity (Greenlough & Rosenblatt, 1984; Kinnunen et al. 1999) Organizational and environmental conditions, Individual and positional characteristics, Finally Personal Characteristics

2.6.1 Role Ambiguity and Role overload

Employees experience various job-related challenges, including stress stemming from role stressors. Three primary categories of role stress have been identified in research: role ambiguity, role overload, and role conflict Von Emster & Harrison (1998). This research will focus on the first two – role overload and role ambiguity.

Role ambiguity refers to the lack of clear information regarding job expectations for a specific position Fields (2002). When employees lack essential details about their responsibilities, performance evaluation criteria, or required skills, it can lead to confusion and stress. Conversely, role overload arises when an individual faces demands exceeding the resources available to fulfill them effectively Gilboa et al. (2008). This imbalance between demands and resources can be a significant source of stress.

Several studies have explored the association between role ambiguity and job performance. The mismatch between available information and required knowledge for satisfactory performance, caused by role ambiguity, has been identified as a major stressor

Gilboa et al. (2008). Their meta-analysis examined the relationship between seven work-related stressors, including role ambiguity, and job performance. They found a negative correlation between role ambiguity and performance, suggesting that unclear expectations can hinder employee output.

While the negative impact of role overload on performance seems intuitive considering the strain of exceeding available resources, the relationship can be more complex. Gilboa et al. (2008) acknowledge that the causality might not be straightforward due to limitations in sample size and the prevalence of cross-sectional studies in their meta-analysis.

LePine et al. (2005) propose that role overload can serve as both a hindrance and a challenge. When overload stems from excessive demands exceeding an employee's resources (time, skills etc.), it undoubtedly acts as a stressor, negatively impacting performance. However, high achievers who thrive on taking on additional responsibilities and strive for efficient completion may also experience role overload. In such cases, overload can be perceived as a challenge that motivates improved performance rather than hindering it.

Prior research supports this notion of individual differences influencing the relationship between role overload and performance. Studies by (LePine and Jackson, (2004) ; Spector and Jex, (1998)) have found positive, negative, and null relationships between overload and performance, highlighting the potential moderating effect of individual characteristics.

The connection between role ambiguity, overload, and job insecurity remains under-researched. One could hypothesize a negative relationship between role overload and job insecurity, considering employees with complex job demands might be seen as more valuable and thus less at risk of losing their jobs. On the other hand, role ambiguity might be expected to have a positive association with perceived job insecurity, as unclear expectations can fuel anxieties about future employment. Therefore, the following two sub-hypotheses are formulated:

HA1: There is a significant effect of negative error management culture on Job overload.

HA2: There is a significant effect of negative error management culture on Job role ambiguity.

2.6.2 Perceived Organizational Support (POS)

Many organizational behavior models emphasize the concept of "organizational climate," which refers to how employees perceive their workplace, this climate acts as an intervening variable, influencing employee behaviors and mediating between the organizational environment and its members' actions Patterson et al. (2005).

Perceived Organizational Support (POS) is a well-established concept in the literature. It reflects the degree to which employees believe their organization values their contributions and cares about their well-being Eisenberger et al. (1986). High POS has been linked to a range of positive employee attitudes and behaviors, including job satisfaction, organizational commitment, various forms of citizenship behavior, lower absenteeism, and a greater desire to remain with the organization Luthans & Sommer (1999).

Recent years have seen an increase in downsizing events, leading to a new psychosocial concern "survivor syndrome" which is the emotional toll on remaining employees (Appelbaum et al., 1997; Baruch & Hind, 1998). Survivors can experience anxieties like those laid off, highlighting the underestimation of downsizing's long-term impact, Remotivating this workforce is crucial for both profitability and remaining employees' job security (Appelbaum et al., 1997).

Beyond layoffs, downsizing divides the workforce - those who witnessed colleagues leave, those anticipating layoffs, and those fearing future cuts Appelbaum et al. (1997). This uncertainty breeds insecurity and a negative perception of organizational support Baruch & Hind (1998).

Perceived organizational support (POS) may buffer these negative effects. Social Exchange Theory suggests employees in unstable work environments feel less supported Lee & Peccei (2007). This study examines POS as a potential buffer for job security perceptions during downsizing. Therefore, the following sub-hypothesis is formulated:

HA3 There is a significant effect of a negative error management culture on Perceived organizational support (POS).

2.6.3 Employability

Job insecurity, characterized by the fear of job loss, poses a threat to every employee, particularly those with limited employability (Van Dam, 2004; Van der Heijden, 2006). Employability, the ability to adapt and thrive in a changing workplace, is emerging as a critical factor in understanding job insecurity and its psychological effects.

Defining employability remains a subject of debate (Fugate et al., 2004; Kanter, 1989; Kluytmans & Ott, 1999). However, a common theme emerges, employability reflects an individual's capacity to navigate labor market shifts through internal (within the organization) or external (seeking new employment) channels, ultimately increasing their likelihood of securing alternative jobs Forrier & Sels (2003).

Traditionally, employability has been assessed using both objective and subjective indicators. Objective measures often focus on human capital or career variables such as education, job position, or work history (Elman & O'Rand, 2002; Forrier & Sels, 2003; Van Dam, 2004; Worth, 2002). More recently, a shift towards subjective criteria has emerged. Employability is now viewed as encompassing "the individual's perception of the available alternatives in the internal and/or external labor market" March & Simon (1958). Similarly, Berntson and Marklund (2007) define employability as "the individual's perception of their possibilities to achieve a new job."

Subjective measures may offer a richer understanding of the interaction between individual and contextual factors, both of which are crucial aspects of employability models Forrier & Sels (2003). Therefore, the following sub-hypothesis is formulated **HA4: There is a significant effect of negative error management culture on Employability.**

2.6.4 Perceived Employability

Employees' perceptions of their work environment and their own professional abilities, can be seen as their employability perception, significantly impact their feelings of job security Silla et al. (2009). This perception is multifaceted, arising from a combination of factors. An employee's career goals, values, and beliefs, which together form their career identity, play a role (Fugate et al., 2004; McArdle & Waters, 2007). A strong career identity, separate from a specific employer, acts as a buffer during times of job insecurity or career changes.

Another key factor influencing employability perception is human capital, which refers to the knowledge, skills, and experience an individual accumulates over their career. Additionally, social capital, the network of contacts and relationships that can provide job opportunities and support, also plays a part (Fugate et al., 2004).

Research suggests that a positive employability perception can help mitigate the negative effects of job insecurity (Greenhalgh & Rosenblatt, 1984; Fugate et al. 2004; Sverke & Hellgren, 2002). Employees who believe they have many alternative jobs options experience less stress and anxiety when faced with job insecurity. Furthermore, a strong sense of employability is linked to higher job satisfaction Berntson & Marklund (2007). Theories like Appraisal Theory Lazarus & Folkman (1984) suggest that individuals with high employability perceive challenges in the job market more positively, leading to less job insecurity. Additionally, the level of education can moderate this relationship. People with lower education levels are more likely to be in insecure jobs, and thus perceive higher job insecurity De Cuyper et al. (2008).

Finally, specific dimensions of employability perception can also influence job insecurity. For instance, feeling adaptable in the workplace can help offset anxieties about job security (McArdle et al., 2007; Siebert et al., 1999). Adaptable individuals are more likely to make plans and seek new opportunities proactively in response to job insecurity. In conclusion, an individual's perception of their employability is a complex interplay of various factors, but it plays a significant role in how they experience job insecurity. Therefore, the following sub-hypothesis is formulated **HA5: There is a significant effect of a negative error management culture on Perceived Employability**

2.7 Relationship between error management culture and job insecurity

Error Management Culture (EMC) significantly impacts both employee perceptions of job security and overall organizational well-being. A supportive and learning-oriented EMC fosters a culture of open communication, allowing employees to report errors promptly and learn from them (Edmondson, 2011, 2014). This proactive approach minimizes the risk of larger, more consequential errors, ultimately contributing to improved performance, stability, and job security within the organization (Vogus & Sutcliffe, 2017; Flin & Maran, 2006).

By removing the stigma associated with mistakes and emphasizing learning, a positive EMC fosters psychological safety. In this environment, employees feel comfortable admitting errors, leading to a more competent and resilient workforce (Edmondson, 2019).

Conversely, organizations that prioritize blame and punishment over learning create a Negative EMC. This climate of fear discourages error reporting and hinders organizational learning from mistakes Vogus & Sutcliffe (2007). This cycle of repeated errors can snowball into larger problems, further jeopardizing job security Reason (2000). Additionally, a lack of transparency around error management practices fuels insecurity and distrust among employees Vogus & Sutcliffe (2007). An obsession with perfectionism within a Negative EMC can further stifle innovation and adaptability.

This ultimately hinders an organization's competitiveness and potentially leads to job cuts as the organization struggles to adapt to a changing environment Edmondson (2014). The effectiveness of EMC hinges on strong leadership that actively promotes a positive approach to error management. While prior research explores the negative effects of error-management cultures on employee well-being, there's a gap in knowledge regarding the precise impact of NEMC on various dimensions of job insecurity, such as job overload, role ambiguity, and perceived organizational support. This study addresses this gap by examining these specific relationships, especially in Egypt. Also, the connection between NEMC and employee perceptions of employability (both current and future) remains relatively unexplored. This research sheds light on this under-investigated area, contributing valuable insights into how NEMC might influence an employee's sense of long-term career security. Limited research exists on how the impact of NEMC on job insecurity might differ across industries in Egypt. This study incorporates data from three distinct sectors (telecommunication, education, and gas/oil) to explore these potential variations and identify the factors influencing such differences. Therefore, the following main Two hypotheses were formulated.

HA: There is a significant effect of Negative Error Management Culture on job insecurity.

HB: There is a significant effect of Negative Error Management Culture on job insecurity will be different due to sector (Telecommunication – Education – Oil and Gas)

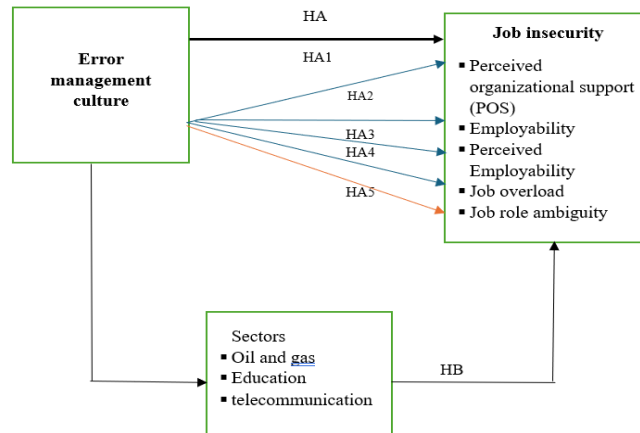


Figure (1): Conceptual framework

3. Methodology

This section will involve data analysis utilizing statistical methods to determine the effect of a Negative Error Management culture on job insecurity. The data analysis will be held using the following procedures: Data entry and encoding, Data preparation followed by demographic data analysis, descriptive statistics, and hypothesis testing.

The first step is preliminary data analysis which focuses on ensuring the quality of the data. This involves running reliability tests to check if the questions in a questionnaire are consistent and stable. Additionally, confirmatory factor analysis is used to validate the scales used to measure abstract concepts, like job insecurity or NEMC.

Next comes the descriptive analysis phase. This involves calculating basic statistics for the demographic data, such as frequencies and percentages, to understand the composition of the sample. Additionally, researchers calculate the mean (average) and standard deviation (spread) for each variable. This helps to identify any general trends within the data.

Following the descriptive analysis, researchers used a one-sample t-test to confirm these trends. This test compares the average score of a variable in the sample to a predetermined value, often a neutral point like 3.

The analysis then moves on to explore relationships between variables. The Pearson correlation coefficient is a common tool used for this purpose. It measures the strength and direction of the association between two variables. The strength is indicated by the magnitude of the coefficient, ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation), with 0 indicating no association. The positive or negative sign reflects the direction of the relationship.

Finally, the analysis might involve more complex techniques. Linear regression analysis helps to understand how independent variables (like aspects of an error-management culture) influence a dependent variable (like job overload). Additionally, analysis of covariance (ANCOVA) allows researchers to test for differences between groups while controlling for the effect of other variables.

3.1 Research sample and population

A stratified random sampling of employees was drawn from across three sectors: telecommunications, education, and gas/oil. The sample included both male and female respondents at all three managerial levels (executive, middle, and supervisory) as well as non-managerial employees. Respondents were further categorized into three age groups: 21-30 years old, 31-42 years old, and 43 years old and above. Finally, the survey captured the educational attainment of each respondent, offering options for bachelor's degree, master's degree, and doctorate. The research questionnaire was initially intended to be distributed to the entire target population of 85,084 individuals but Due to logistical constraints and the huge number of the population, a stratified random sampling approach was employed, resulting in the distribution of 385 questionnaires to the target population.

3.2 Measures

This research employed a standardized survey instrument to assess two key variables: error management culture and job insecurity. The survey items were meticulously modified to enhance participant comprehension. A validated 14-item scale developed by van Dyck et al. (2005) was utilized to evaluate the error management culture within the organization. This scale specifically measured various dimensions of error management (Questions 8-21). Then A comprehensive 33-item scale was implemented to capture the multifaceted concept of job insecurity. The scale was further segmented into the following sub-constructs; Job Overload (Section B, Questions 22-29) This 8-item

sub-scale, established by Caplan et al. (1980), assessed the level of workload pressure experienced by employees. Job Role Ambiguity (Section C, Questions 30-35) This 6-item sub-scale, developed by Breaugh and Colihan (1994), measured the extent of unclearness or vagueness surrounding job duties and responsibilities.

Perceived Organizational Support (Section D, Questions 36-43) This 8-item sub-scale, created by Eisenberger et al. (1986), evaluated the degree to which employees perceived their organization as a source of support and assistance. Employability (Section E, Questions 44-46): This 3-item sub-scale, established by Janssens et al. (2003), assessed employees' overall marketability and ability to secure alternative employment. Perceived Employability (Section F, Questions 47-54): This 8-item sub-scale, developed by Ashford et al. (1989), measured employees' self-perceptions of their skills, knowledge, and experiences as valuable assets in the job market.

A total of 309 questionnaires were successfully returned by participants across various industry sectors, yielding a response rate of 80.6%. To ensure data quality, the research reviewed the completed questionnaires for completeness and validity before proceeding with the required statistical analyses. Subsequently, all response values from the various questions were coded and entered a data management software, specifically Microsoft Excel and SPSS 27, for further analysis. To maintain consistency throughout the survey instrument, a standardized 5-point Likert scale was employed. This scale ranged from 1 (strongly disagree) to 5 (strongly agree), as illustrated in Table (3).

Table (3): Opinions Encoding

Opinion	Weights
Strongly disagree	1
Disagree	2
No opinion	3
Agree	4
Strongly agree	5

3.3 Data Preparation

Preliminary data analysis is the main and required step before executing the statistical analysis, as we use it to ensure that the next statistical analysis will be performed correctly. The process of preliminary data analysis went through the following procedures:

- 1- Conducting reliability tests.
- 2- Determining the statistical techniques that will be used in data analysis.

3.3.1. Reliability test

The term "reliability" refers to the degree of stability exhibited by the statements within questionnaires. Put simply, if the questionnaires are given to another sample of the same size, they will yield similar results with a probability equivalent to the reliability coefficient. Cronbach's Alpha was employed to assess the reliability of the questionnaires. Cronbach's Alpha is a statistical coefficient that ranges from zero to one. If the questionnaire data lacks consistency, the coefficient will assume a value of zero. Conversely, if the data exhibits total consistency, the coefficient will assume a value of one.

To clarify, augmenting the magnitude of Cronbach's Alpha signifies enhancing the reliability and validity of the collected data. Cronbach's Alpha has a minimum value of 0.7, and a value greater than 0.7 provides a robust signal for assessing the stability of the data (Cronbach, 1951). However, it is worth noting that values over 0.6 are also deemed acceptable according to previous studies (Griethuijsen et al., 2015; Taber, 2018). Table (6) shows the results of the Reliability test for the research variables.

Table (4): Reliability test

Variables		No. of Items	Reliability <i>Cronbach's Alpha</i>
Error-Management culture (EMC)		14	0.876
Job insecurity (JI)	Job overload (JO)	8	0.717
	Job role ambiguity (JRA)	6	0.808
	Perceived organizational support (POS)	8	0.737
	Employability (E)	2	0.667
	Perceived employability (PE)	8	0.620
	Overall	32	0.867

Table (4) shows that:

All variables' reliability exceeds the minimum threshold of 0.60, suggesting that the data obtained from the questionnaire exhibits stability. Consequently, the data obtained from the questionnaire accurately assesses the construct for which it was generated. As a result, it accurately reflects the intended population and can be utilized in the subsequent statistical analysis.

The purpose of factor analysis is to assess the reliability of the measures and define the fundamental structure of the variable in the data matrix. To clarify the interrelation among numerous factors, factor analysis employs a reduced set of constructs. In other words, the correlations between factors in the same group (construct) are relatively weaker when compared to those between factors in a distinct construct Mukhopadhyay (2009). The suitability of the data for confirmatory factor analysis (CFA) was initially evaluated. Subsequently, the elements of the reassert variables were validated through the factor analysis results.

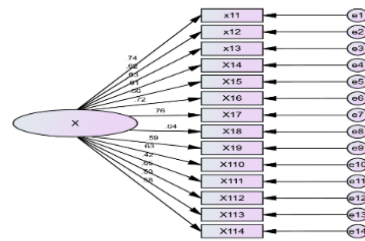


Figure (2) CFA path diagram of the Error-Management culture (EMC)

The following table presents the goodness of fit indices for Error-Management culture.

Table (5) - Goodness of fit indices for Error-Management culture

Variable	CMIN/DF	RMSEA	AIC	GFI
Error-Management culture	9.079	0.09124	1248.5	0.9017

This first application reported all goodness of fit indices for the hypothesized model; thereafter, only a selected group was reported. Next, we examine each cluster with the hypothesized model. Arbuckle (2007).

Fit data show initial results. First, chi-square, then RMSEA, AIC, and CFI. Reviewing continuous data model results sets a baseline for the categorical models of interest. Many replications converged under all conditions. Nearly all replications that failed to converge were over-factored in fourteen-factor models, consistent with (Barendse et al., 2015; Garrido, 2016).

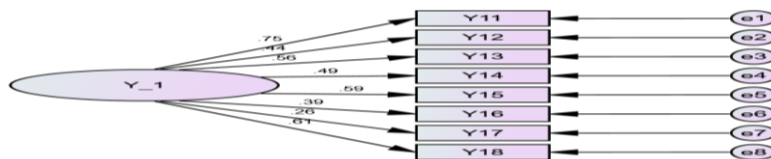


Figure (3) CFA path diagram of the Job overload (JO)

The following table presents goodness of fit indices for Job overload.

Table (6) - Goodness of fit indices for Job overload

Variable	CMIN/DF	RMSEA	AIC	GFI
Job overload (JO)	8.978	0.1012	1214.7	0.9111

Fit data are used to show the first results. The RMSEA, AIC, and CFI are then talked about, starting with the chi-square. First, the results from the continuous data models are looked at to give the category models, which are the main focus, a point of reference. Most of the replications converged in all cases. In line with this, almost all replications that didn't converge were using an eight-factor model that had too many factors.

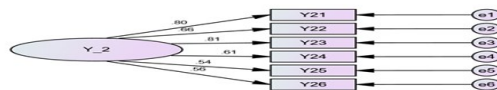


Figure (4) CFA path diagram of the Job role ambiguity

The following table presents goodness of fit indices for role ambiguity.

Table (7) - Goodness of fit indices for Job role ambiguity

Variable	CMIN/DF	RMSEA	AIC	GFI
Job role ambiguity (JRA)	10.2	0.0872	1478.2	0.9276

Fit statistics are utilized to present the initial results. The chi-square is described initially, then the RMSEA, AIC, and CFI. Priority is given to reviewing the outcomes of the continuous data models to provide a benchmark for the categorical models that are of greater significance. In all circumstances, most replications converged. Following this, most unsuccessful replications utilized an over-factored six-factor model.

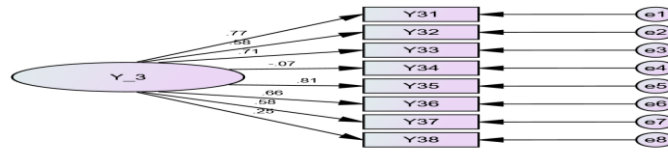


Figure (5) CFA path diagram of the Perceived organizational support (POS)

The following table presents goodness of fit indices for Perceived organizational support.

Table (8) - Goodness of fit indices for Perceived organizational support

Variable	CMIN/DF	RMSEA	AIC	GFI
Perceived organizational support (POS)	8.912	0.0998	1322.9	0.9078

Fit statistics are utilized to present the initial results. The chi-square is described initially, then the RMSEA, AIC, and CFI. Priority is given to reviewing the outcomes of the continuous data models to provide a benchmark for the categorical models that are of greater significance. In all circumstances, most replications converged. Following this observation, most failure convergence replications involved an over-factored six-factor model after the isolation of items with weights below 0.4: 0.5.

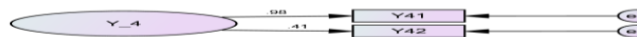


Figure (6) CFA path diagram of the Employability (E)

The following table presents goodness of fit indices for Employability.

Table (9) - Goodness of fit indices for Employability

Variable	CMIN/DF	RMSEA	AIC	GFI
Perceived Employability (E)	6.978	0.1011	1124.8	0.9243

Fit statistics are utilized to present the initial results. The chi-square is described initially, then the RMSEA, AIC, and CFI. Priority is given to reviewing the outcomes of the continuous data models to provide a benchmark for the categorical models that are of greater significance. In all circumstances, most replications converged.

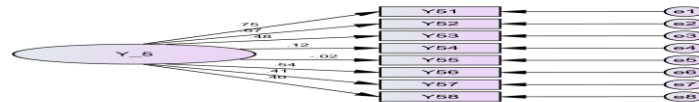


Figure (7) CFA path diagram of the Perceived employability (PE)

The following table presents goodness of fit indices for Perceived employability.

Table (10) - Goodness of fit indices for Perceived employability

Variable	CMIN/DF	RMSEA	AIC	GFI
Perceived employability (PE)	7.912	0.0989	1189.7	0.9126

The initial results are presented by fit statistics. First, the chi-square is discussed, followed by the RMSEA, the AIC, and CFI. Results from the continuous data models are reviewed first to establish a point of reference for the categorical models of primary interest. Across all conditions, most replications converged. Consistent with this, almost all replications that failed to converge were over factored six-factor model after isolating the items whose weights were less than 0.4: 0.5.

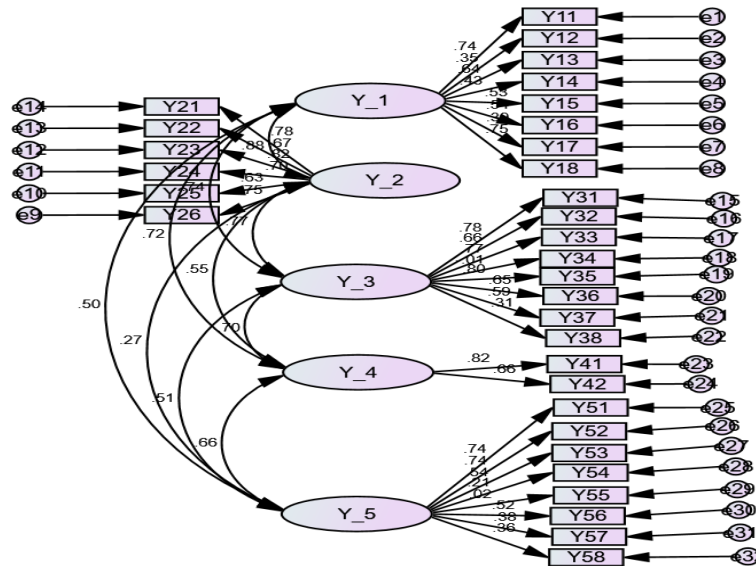


Figure (8) CFA path diagram for total Job insecurity

Table (11) - Goodness of fit indices for total Job insecurity

Variable	CMIN/DF	RMSEA	AIC	GFI
total Job insecurity	9.871	0.01007	1922.24	0.9018

The initial results are presented by fit statistics. First, the chi-square is discussed, followed by the RMSEA, the AIC, and CFI. Results from the continuous data models are reviewed first to establish a point of reference for the categorical models of primary interest. Across all conditions, most replications converged. Consistent with this, almost all replications that failed to converge were over factored 28-factor model after isolating the items whose standardized weights were less than 0.4: 0.5.

3.3.2 Determining the Statistical Techniques

Statistical techniques and tests that will be used in the statistical analysis will be as follows:

- 1- Conducting frequencies and percentages of demographic data.
- 2- Conducting Descriptive Statistics by calculating Mean and Standard deviation (SD), to determine the general trend in the sample.
- 3- Conducting a One-sample *t*-test to confirm the general trend in the sample, by comparing the sample mean to a default value of 3, which expresses the mean of the weights used (i.e., neutral).
- 4- To assess the presence of a relationship between the independent and dependent variables, the Pearson correlation coefficient is computed. This value is denoted as *R* and has a range of -1 to +1. The magnitude of the correlation between the variables increases as the correlation value approaches one, irrespective of the sign. A correlation value closer to 0 indicates a weaker association between the variables. Conversely, the positive or negative nature of the association is indicated by the sign of the correlation coefficient. A negative correlation sign signifies an indirect association between the two variables, while a positive correlation sign suggests a direct relationship.
- 5- Conducting simple Linear Regression Analysis to figure out the effect of Error-Management culture and its dimensions (The independent variables) on Job overload (The dependent variable) and analysis of covariance (ANCOVA) to test the difference between variables.

3.3.2.1 Demographic data analysis

Frequencies and percentages of the demographic variables were calculated to explore the characteristics of the study sample as shown in Table (13).

Table (11): Demographic data analysis (Age)

Variable	Items	Percentage (%)
Gender	Male	36.2
	Female	63.8
Age	21-31	72.4
	31-42	12.4
	Above 42	15.2
Level of education	Bachelor of Science	73.3
	Masters	23.8
	Doctorate	2.9
Sector	Telecommunication sector	29.7
	Education sector	39.5
	Petrol sector	30.8
Managerial level	Top	19
	Middle	29.5
	Operational	20
	Non managerial employee	31.4

3.3.2.2 Descriptive Statistics

Descriptive Statistics for variables were carried out by calculating the mean and standard deviation (SD) to obtain the general opinion trend of the research sample. In addition, a One-sample *t*-test was applied to confirm the general opinion trend of the research sample. Table (14) shows the mean, standard deviation, and *t*-test.

Table (12): Descriptive Statistics and *t*-test

Variables	Descriptive Statistics		<i>t</i> -test	
	Mean	SD	<i>t</i>	<i>p</i> -value
Error-Management culture (EMC)	3.47	0.710	6.796	0.000
Job overload (JO)	3.32	0.617	5.237	0.000
Job role ambiguity (JRA)	3.40	0.775	5.228	0.000
Perceived organizational support (POS)	3.32	0.630	5.150	0.000
Employability (E)	3.21	0.863	2.489	0.014
Perceived employability (PE)	3.08	0.555	1.562	0.121
Job insecurity (JI)	3.26	0.491	5.514	0.000

Table (12) shows that:

- 1- The general trend for the sample's opinions on Error-Management culture (EMC) tends to agree, whereas the mean (3.47) is greater than 3. Moreover, the *t*-test confirmed that, whereas the *p*-value of the *t*-test is less than the significance level at 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 2- The general trend for the sample's opinions on Job overload (JO) tends to agree, whereas the mean (3.32) is greater than 3. Moreover, the *t*-test confirmed that, whereas the *p*-value of the *t*-test is less than the significance level at 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 3- The general trend for the sample's opinions on Job role ambiguity (JRA) tends to agree, whereas the mean (3.40) is greater than 3. Moreover, the *t*-test confirmed that, whereas the *p*-value of the *t*-test is less than the significance level at 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 4- The general trend for the sample's opinions for Perceived organizational support (POS) tends to agree, whereas the mean (3.32) is greater than 3. Moreover, the *t*-test confirmed that, whereas

the p -value of the t -test is less than the significance level at 5% (p -value = **0.000** < $\alpha = 0.05$).

- 5- **The general trend for the sample's opinions for Employability (E)** tends to agree, whereas the mean (3.21) is greater than 3. Moreover, the t -test confirmed that, whereas the p -value of the t -test is less than the significance level at 5% (p -value = **0.014** < $\alpha = 0.05$).
- 6- **The general trend for the sample's opinions for Perceived employability (PE)** tends to be **neutral**, whereas the mean (3.08) is close to 3. Moreover, the t -test confirmed that, whereas the p -value of the t -test is greater than the significance level at 5% (p -value = **0.121** > $\alpha = 0.05$).
- 7- **The general trend for the sample's opinions on Job insecurity (JI)** tends to agree, whereas the mean (3.26) is greater than 3. Moreover, t -test confirmed that, whereas the p -value of the t -test is less than the significance level at 5% (p -value = **0.000** < $\alpha = 0.05$).

3.3.2.3 Statistical analysis to test the hypotheses

In this section, some statistical techniques will be conducted to investigate the main two hypotheses, which are:

HA "There is a significant effect of negative error management culture on job insecurity."

and the following sub-hypotheses:

- HA₁**: There is a significant effect of a negative error management culture on Job overload.
- HA₂**: There is a significant effect of a negative error management culture on Job role ambiguity.
- HA₃**: There is a significant effect of a negative error management culture on Perceived organizational support.
- HA₄**: There is a significant effect of a negative error management culture on Employability.
- HA₅**: There is a significant effect of a negative error management culture on Perceived employability.

HB: "There is a significant effect of a negative error management culture on job insecurity will be different due to sector"

3.3.2.3.1 Testing the main hypothesis

In this section, statistical analysis was conducted to test the main hypothesis; that is: “*There is a significant effect of negative error management culture on job insecurity*”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Error-Management culture (The independent variable) on job insecurity (The dependent variable). Table (15) shows regression coefficients, standard Error (S.E.), **t-test**, correlation coefficient (**R**), coefficient of determination (**R²**) and **F-test**.

Table (13): Regression Model between Negative Error-Management culture and job insecurity

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	1.537	0.168	9.162	0.000	0.719	0.518	110.477	0.000
EMC	0.498	0.047	10.511	0.000				

Table (13) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **job insecurity (JI)**, whereas the regression coefficient is 0.498 and the *p*-value of the *t*-test is less than the significance level at 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 2- Moreover, the regression model was statistically significant, whereas the *p*-value of *F*-test is less than 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 3- **Negative Error-Management culture** is moderately correlated with **job insecurity**, with a value of correlation coefficient (0.719). It is also noted that a **Negative Error-Management culture** can explain approximately 51.8% of changes in **job insecurity**, while the remaining may be due to random error or other factors that may have an impact on **job insecurity** and have not been addressed.

In conclusion, it was found that There is a significant effect of a negative error management culture on job insecurity, therefore the main hypothesis was accepted.

3.3.2.3.2 Testing the 1st sub hypothesis

In this section, statistical analysis was conducted to test the 1st sub hypothesis; that is: “*There is a significant effect of a negative error management culture on Job overload*”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Negative Error-Management culture (The independent variable) on Job overload (The dependent variable). Table (16) shows regression coefficients, standard Error (S.E.), t-test, correlation coefficient (R), coefficient of determination (R²), and F-test.

Table (14): Regression Model between Error-Management culture and Job overload

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	1.217	0.218	5.578	0.000	0.695	0.483	96.407	0.000
EMC	0.605	0.062	9.819	0.000				

Table (14) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **Job overload (JO)**, whereas the regression coefficient is 0.605 and the p-value of the t-test is less than the significance level at 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 2- Moreover, the regression model was statistically significant, whereas the p-value of F-test is less than 5% ($p\text{-value} = 0.000 < \alpha = 0.05$).
- 3- **Negative Error-Management culture** is moderately correlated with **Job overload**, with a value of correlation coefficient (0.695). It is also noted that a **Negative Error-Management culture** can explain approximately 48.3% of changes in **Job overload**, while the remaining may be due to random error or other factors that may have an impact on **Job overload** and have not been addressed.

As a conclusion, it was found that There is a significant effect of a Negative error management culture on Job overload, therefore the 1st sub hypothesis was accepted.

3.3.2.3.3 Testing the 2nd sub hypothesis

In this section, statistical analysis was conducted to test the 2nd sub hypothesis; that is: “*There is a significant effect of a Negative error management culture on Job role ambiguity*”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Negative Error-Management culture (The independent variable) on Role ambiguity (The dependent variable). Table (17) shows regression coefficients, standard Error (S.E.), t-test, correlation coefficient (R), coefficient of determination (R²), and F-test.

Table (15): Regression Model between Error-Management culture and Job role ambiguity

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	0.975	0.293	3.328	0.000	0.639	0.408	71.062	0.000
EMC	0.697	0.083	8.430	0.000				

Table (15) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **Job role ambiguity (RA)**, whereas the regression coefficient is 0.697 and the p-value of the t-test is less than the significance level at 5% (p-value = **0.000** < $\alpha = 0.05$).
- 2- Moreover, the regression model was statistically significant, whereas the p-value of F-test is less than 5% (p-value = **0.000** < $\alpha = 0.05$).
- 3- **Negative Error-Management culture** is moderately correlated with **Job role ambiguity**, with a value of correlation coefficient (0.639). It is also noted that **Negative Error-Management culture** can explain approximately 40.8% of changes in **Job role ambiguity**, while the remaining may be due to random error or other factors that may have an impact on **Job role ambiguity** and have not been addressed.

In conclusion, it was found that there is a significant effect of negative error management culture on Job role ambiguity, therefore the 2nd sub hypothesis was accepted.

3.3.2.3.4 Testing the 3rd sub hypothesis

In this section, statistical analysis was conducted to test the 3rd sub hypothesis; that is: “*There is a significant effect of Negative error management culture on Perceived organizational support*”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Negative Error-Management culture (The independent variable) on Perceived organizational support (The dependent variable). Table (18) shows regression coefficients, standard Error (S.E.), **t-test**, correlation coefficient (**R**), coefficient of determination (**R²**), and **F-test**.

Table (16): Regression Model between Error-Management culture and Perceived organizational support

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	1.496	0.250	5.987	0.000	0.591	0.349	55.256	0.000
EMC	0.525	0.071	7.433	0.000				

Table (16) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **Perceived organizational support (POS)**, whereas the regression coefficient is 0.525 and the *p*-value of the *t*-test is less than the significance level at 5% (*p*-value = **0.000** < α = 0.05).
- 2- Moreover, the regression model was statistically significant, whereas the *p*-value of *F*-test is less than 5% (*p*-value = **0.000** < α = 0.05).
- 3- **Negative Management culture** is moderately correlated with **Perceived organizational support**, with a value of correlation coefficient (0.591). It is also noted that **Negative error management culture** can explain approximately 34.9% of changes in **Perceived organizational support**, while the remaining may be due to random error or other factors that may have an impact on **Perceived organizational support** and have not been addressed.

In conclusion, it was found that There is a significant effect of Negative error management culture on Perceived organizational support, therefore the 3rd sub-hypothesis was accepted.

3.3.2.3.5 Testing the 4th sub hypothesis

In this section, statistical analysis was conducted to test the 4th sub hypothesis; that is: “*There is a significant effect of Negative error management culture on Employability*”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Negative Error-Management culture (The independent variable) on Employability (The dependent variable). Table (19) shows regression coefficients, standard Error (S.E.), t-test, correlation coefficient (R), coefficient of determination (R²), and F-test.

Table (17): Regression Model between Negative Error-Management culture and Employability

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	1.650	0.394	4.188	0.000	0.370	0.137	16.298	0.000
EMC	0.449	0.111	4.037	0.000				

Table (17) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **Employability (E)**, whereas the regression coefficient is 0.449 and the p-value of the t-test is less than the significance level at 5% (p-value = **0.000** < α = 0.05).
- 2- Moreover, the regression model was statistically significant, whereas the p-value of F-test is less than 5% (p-value = **0.000** < α = 0.05).
- 3- **Negative Error-Management culture** is weakly correlated with **Employability**, with a value of correlation coefficient (0.370). It is also noted that **Negative Error-Management culture** can explain approximately 13.7% of changes in **Employability**, while the remaining may be due to random error or other factors that may have an impact on **Employability** and have not been addressed.

In conclusion, it was found that There is a significant effect of Negative error management culture on Employability, therefore the 4th sub-hypothesis was accepted.

3.3.2.3.6 Testing the 5th sub hypothesis

In this section, statistical analysis was conducted to test the 5th sub hypothesis; that is: “There is a significant effect of Negative error management culture on Perceived employability”. To do so, a simple Linear Regression Analysis will be conducted to figure out the effect of Error-Management culture (The independent variable) on Perceived employability (The dependent variable). Table (20) shows regression coefficients, standard Error (S.E.), t-test, correlation coefficient (R), coefficient of determination (R²), and F-test.

Table (18): Regression Model between Error-Management culture and Perceived employability

Variables	Regression Coefficients		t-test		R	R ²	F-test	
	Value	S.E.	t	p-value			F	p-value
Constant	2.345	0.262	8.939	0.000	0.273	0.074	8.272	0.005
EMC	0.213	0.074	2.876	0.005				

Table (18) shows that:

- 1- There is a positive statistically significant effect of **Negative Error-Management culture (EMC)** on **Perceived employability (PE)**, whereas the regression coefficient is 0.213 and the p-value of the t-test is less than the significance level at 5% ($p\text{-value} = 0.005 < \alpha = 0.05$).
- 2- Moreover, the regression model was statistically significant, whereas the p-value of F-test is less than 5% ($p\text{-value} = 0.005 < \alpha = 0.05$).
- 3- **Negative Error-Management culture** is weakly correlated with **Perceived employability**, with a value of correlation coefficient (0.273). It is also noted that **Negative Error-Management culture** can explain approximately 7.4% of changes in **Perceived employability**, while the remaining may be due to random error or other factors that may have an impact on **Perceived employability** and have not been addressed.

In conclusion, it was found that there is a significant effect of Negative error management culture on Perceived employability; therefore the 5th sub-hypothesis was accepted.

Table (19) The result of the first main hypothesis analysis and its sub-variables prepared by the researchers from the statistical results

Hypothesis	significance
There is a significant effect of negative error management culture on Job insecurity.	it was found that there is a significant effect of negative error management culture on Job insecurity, therefore the main hypothesis was accepted.
1: There is a significant effect of negative error management culture on Job overload.	it was found that there is a significant effect of error management culture on Job overload, therefore the 1st sub-hypothesis was accepted. (regression coefficient = 0.605, p-value < 0.005). Error-management culture can explain approximately 48.3% of the changes in job overload.
2: There is a significant effect of negative error management culture on Job role ambiguity.	it was found that there is a significant effect of negative error management culture on Job role ambiguity, therefore the 2nd sub-hypothesis was accepted (regression coefficient = 0.697, p-value < 0.005). Error-management culture can explain approximately 40.8% of the changes in job role ambiguity.
3: There is a significant effect of negative error management culture on Perceived organizational support.	It was found that there is a significant effect of error management culture on Perceived organizational support, therefore the 3rd sub-hypothesis was accepted. regression coefficient = 0.525, p-value < 0.005). Error-management culture can explain approximately 34.9% of the changes in perceived organizational support.
4: There is a significant effect of negative error management culture on Employability.	it was found that there is a significant effect of error management culture on Employability, therefore the 4th sub-hypothesis was accepted. regression coefficient = 0.449, p-value < 0.005). Error-management culture can explain approximately 13.7% of the changes in employability.
5: There is a significant effect of negative error management culture on Perceived employability.	it was found that there is a significant effect of error management culture on Perceived employability, therefore the 5th sub-hypothesis was accepted. (regression coefficient = 0.213, p-value < 0.005). Error-management culture can explain approximately 7.4% of the changes in perceived employability.

3.3.2.3.7 Testing the Second Main Hypothesis

HB: "There is a significant effect of Negative error management culture on job insecurity will be different due to sector (Telecommunication – Education – Petrol) "

Analysis of covariance (ANCOVA) is used to test HB the difference between the different sectors of the effect of error management culture on job insecurity, the results are shown as follows:

Table (20) ANCOVA table-Tests of Between-Subjects Effects
Dependent Variable: Job insecurity

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	36.015 ^a	3	12.005	123.167	.000	.548
Intercept	27.743	1	27.743	284.631	.000	.483
X	34.709	1	34.709	356.102	.000	.539
Compare	11.233	2	5.616	12.194	.005	.498
Error	29.728	305	.097			
Total	3315.286	309				
Corrected Total	76.743	308				

R Squared = .548 (Adjusted R Squared = .543)

From Table (20) it was found that:

Since the sig < $\alpha = 0.05$ about testing the difference between sectors (Telecommunication – Education – Petrol) so, there is a significant difference **between** the different sectors of the effect of Negative error management culture on job insecurity between telecommunication, education, and petrol.

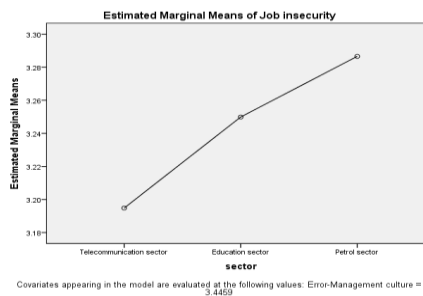


Figure (9) shows the comparison between sectors

Figure (9) **presents** the difference between sectors; it was seen that the effect of Negative error management culture on job insecurity will be stronger in the petroleum sector, less in the education sector, and lower in the telecommunication sector.

Finally, it could be concluded that we can accept HB "There is a significant effect of Negative error management culture on job insecurity will be different due to sector."

4. Finding and discussions

This study examined the effect of a Negative error-management culture (NEMC) on various employee job insecurity dimensions.

The positive correlation between NEMC and job insecurity aligns with research by Vance & Sinclair (2004) who highlighted how blame-driven error cultures can generate anxiety and a constant fear of being fired.

The finding that NEMC contributes to job overload aligns with Tepper (2007) who theorized that a punitive approach discourages information sharing and help-seeking, leading to employees taking on additional tasks to avoid blame.

The link between NEMC and role ambiguity is consistent with the work of Huang et al. (2012) who suggested that a lack of trust and open communication in blame-oriented cultures fosters unclear expectations and confusion about job roles.

The negative impact of a negative EMC on perceived organizational support aligns with research by Ambrose & Arnaud (2004) who emphasized the importance of psychological safety (feeling comfortable taking risks without fear of punishment) for fostering a supportive work environment.

The study confirmed the main hypothesis (HA) that a NEMC significantly impacts overall job insecurity. This aligns with existing research highlighting how blame-driven error cultures can generate anxiety, stress, and a constant fear of being fired (Vance & Sinclair, 2004). The results further support the sub-hypotheses (HA1, HA2, HA3) by demonstrating significant positive correlations between negative EMC and job overload, role ambiguity, and perceived organizational support.

The findings revealed a moderate positive correlation between negative EMC and job overload, job role ambiguity, and perceived organizational support. These results support prior research by (Greenhalgh & Rosenblatt, 1984; Sverke & Hellgren, 2002; Fugate et al. 2004; LePine et al., 2005; Goodman et al. 2011; Frese & Keith 2015) who found that organizations with punitive approaches to error management can generate employee anxiety, discourages information sharing, leading to confusion and a feeling of being unsupported. In such environments, employees may hesitate to seek clarification or assistance due to fear of blame, leading to increased workload and unclear job roles. Additionally, the lack of trust fostered by NEMC can contribute to a perception of low organizational support.

Interestingly, the study found a weaker but significant correlation between NEMC and both employability (HA4) and perceived employability (HA5). While negative EMC may generate stress and anxiety, as acknowledged by Westman (1991), it might not directly hinder skill development or immediate marketability. However, the long-term impact might be negative. Fear of errors can stifle creativity and risk-taking, hindering the acquisition of new skills valuable for future jobs, this result is aligned with Sitkin & Pablo (1992) mentioned that the constant fear of errors can stifle creativity and innovation, potentially harming long-term employability. Furthermore, Brockner (1985) suggests that a negative EMC fostering blame and undermining self-esteem might not directly hinder existing skills but could reduce an employee's willingness to take on new challenges or seek additional training opportunities that enhance their future marketability.

The ANCOVA analysis revealed a significant difference in the effect of a negative error-management culture on job insecurity across the three sectors: telecommunication, education, and gas/oil. The impact was strongest in the petroleum sector, followed by education and then telecommunication.

Building upon the work of Hu et al. (2011), the study emphasizes the critical role played by the severity of potential consequences in shaping employee perceptions of job security. The gas and oil industry serves as a prime illustration of this concept. As noted by Lee et al. (2020), errors in this high-stakes environment can have disastrous environmental and financial repercussions. This inherently fosters a greater sense of job insecurity among employees compared to industries where error consequences are less severe.

Furthermore, the research aligns with Skogdalen et al. (2018) by investigating the influence of error rectification difficulty on job insecurity. The study demonstrates how the complexity and cost associated with rectifying errors in the gas and oil industry significantly contribute to employee anxieties. The difficulty of fixing mistakes in the oil and gas sector, as opposed to industries where errors might be more readily addressed, exacerbates employee feelings of job insecurity.

5. Recommendation

The research results suggest that to foster a positive error management culture, organisations should implement mandatory leadership training programs. These programs possess the capacity to augment the capabilities of leaders in terms of providing constructive feedback, engaging in active hearing, and cultivating open communication concerning oversights. In addition, it is recommended to regularly administer psychological safety surveys to assess the degree to which personnel are comfortable disclosing errors. Analyze the results to identify areas that may benefit from improvement and tailor actions accordingly. Furthermore, it would be beneficial for organizations to implement reward and recognition systems that formally recognize and commemorate instances of error resolution and effective discovery. This practice promotes transparency and the gain of knowledge through mistakes. Organizations can form specialized error-rectification teams comprised of individuals with specialized expertise and competencies in efficiently correcting errors. By doing so, the burden on individual staff members is mitigated, and a shared sense of responsibility for locating solutions is fostered. In addition, implement mentorship programs that foster connections between experienced workers and those who are confronted with heightened job insecurity due to (NEMC). Mentors provide invaluable guidance and support in the process of developing professional strategies and honing skills. This study aims to assess the feasibility of implementing job rotation programs to improve the skill sets of employees and foster a more comprehensive understanding of the operational procedures of the organization. Diversification is a process that possesses the capacity to enhance the marketability and career prospects of individuals. Conduct regular skill gap assessments to identify specific areas where personnel may benefit from additional training to maintain or enhance their employability. When designing training programmes, it is critical to implement strong internal mobility initiatives that efficiently facilitate career advancement within the institution. This demonstrates the organization's commitment to developing employee growth and reduces reliance on external sources of information, which may mitigate fears.

6. Future Area Research

Future studies could quantify the precise relationship between error severity and job insecurity. This would allow for a more nuanced understanding of the impact and facilitate the development of targeted interventions. Given the link between job insecurity and employee anxieties, further research is needed to explore how organizations can support the mental health of employees working in high-risk environments. It's crucial to acknowledge the limitations of the study, such as the specific sectors and demographics included. Future research could expand the scope to include more industries. Additionally, longitudinal studies may provide insights into the long-term effects of error management practices on employee well-being and organizational outcomes.

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كيف تغذي ثقافة إدارة الأخطاء السلبية انعدام الأمن الوظيفي في

مختلف الصناعات في مصر؟

د. زينب أمين السيد خيال

المستخلص

هدف هذا البحث الي معرفة كيفية تأثير ثقافة إدارة الأخطاء السلبية (NEMC) على انعدام الأمن الوظيفي عبر ثلاث قطاعات رئيسية في مصر: الاتصالات، والتعليم، والبتترول، والغاز.. وعلى الرغم من اعتماد جميع القطاعات الثلاثة على موظفين مهرة، إلا أن طبيعة عملهم وتحملهم للأخطاء تختلف. اعتمد البحث على استبانة موحدة لتقييم متغيرين رئيسيين: ثقافة إدارة الأخطاء وانعدام الأمن الوظيفي.

تم إجراء عينة عشوائية طبقية من الموظفين وشملت العينة مشاركين من الذكور والإناث على جميع المستويات الإدارية الثلاثة: التنفيذيين والوسطى والإشرافيين وكذلك الموظفين غير الإداريين عبر ثلاث قطاعات: الاتصالات والتعليم والنفط / الغاز. تم توزيع مجموعه ٣٨٥ استبياناً وإعادتها بنجاح من قبل المشاركين عبر قطاعات صناعة مختلفة، مما أدى إلى معدل استجابة بلغ ٨٠,٦٪.

تم استخدام معامل ألفا كرو نباخ لتقييم موثوقية الاستبيانات وقد تجاوز (٠,٦٠). تم اختبار الفرضية الأولى عن طريق تحليل الانحدار الخطي البسيط (٠,٤٩٨) وكانت ذات دلالة إحصائية.

كشفت تحليل التباين المشترك (ANCOVA) عن اختلاف كبير في كيفية تأثير ثقافة إدارة الأخطاء السلبية على انعدام الأمن الوظيفي عبر القطاعات الثلاثة. ولوحظ أن تأثير ثقافة إدارة الأخطاء السلبية على انعدام الأمن الوظيفي كان أقوى في قطاع البترول، وأقل في قطاع التعليم، وأقل في قطاع الاتصالات. علاوة على ذلك، تؤكد الدراسة أن ثقافة إدارة الأخطاء السلبية يمكن أن تؤدي إلى انعدام الأمن الوظيفي، مما يؤثر على معنويات الموظفين وبالتالي على أدائهم.

الكلمات المفتاحية: ثقافة إدارة الأخطاء؛ انعدام الأمن الوظيفي؛ النفط/الغاز؛ التعليم، مصر