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Article

Research Culture among Higher Education Institutions of Saudi Arabia and its impact on faculty performance: Assessing the Role of Instrumentality, Research Infrastructure, and Knowledge Production

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Abstract

Evaluation of Higher Educational Institutions (HEIs) and faculty members depends on scientific study. Effective research culture among HEIs helps faculty members and HEIs improve their performance in this area. Unfortunately, little empirical study has been conducted to determine what elements influence research culture in higher education institutions and how to research culture increases staff performance. Consequently, this study aims to empirically explore the effects of research infrastructure, knowledge generation, and organizational instrumentality on research culture, which affects the job performance of faculty members. 249 faculty members from various Saudi Arabian HEIs provided information that was examined using Structural Equation Modelling (SEM) and Amos-16. This study found that knowledge production, research infrastructure, and organizational instrumentality positively affect research culture and the job performance of faculty members, with the exception that research culture does not mediate the relationship between knowledge production and unproductive work behavior. In addition, the relationship between research infrastructure and contextual performance is not mediated by research culture. This study's findings will assist higher education institutions, research centers, and faculty members build a thriving research culture, which is impossible without research infrastructure, knowledge generation, and organizational instrumentality. This is the first-ever study among Saudi Arabia's HEIs.

Keywords

Research Culture, Research Infrastructure, Organizational Instrumentality, Knowledge Production,

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Over the course of the past two decades, the field of higher education has been operating within a dynamic environment, surrounded by multiple challenges relating to the rapid development of new technologies, an increase in demand, the spread of knowledge, an increased emphasis on quality, competitiveness, changing funding mechanisms, regulations, and internationalization (Baba et al., 2021). In general, the various challenges faced are putting pressure on higher education institutions to adjust to the shifting nature of the educational environment around the world (Karatepe et al., 2019). This can be done by redefining and reformulating leadership within academic settings (Al-Husseini et al., 2021). It is a well-known and well-established fact that the teaching staff members are the most valuable assets of any company and educational institution (Tytherleigh* et al., 2005). The lessons of the faculty members provide the students with the knowledge which will be beneficial to them in the future. It is a commonly held belief that universities are effective in the domains of research and teaching in spotting and cultivating talent for the advancement of science and technology (Baba et al., 2021). Every year, faculty members at each university are subjected to reviews and evaluations of their work performance.

Scientific research is one of the important elements in evaluating the performance of higher educational institutes. One of the most frequently asked questions by international accreditation bodies from universities is up to what extent your faculty members are involved in research and development activities? Different accrediting agencies' emphasis on faculty participation in scientific research has made higher education institutions aware of the significance of scientific research and compelled them to provide the necessary facilities and incentives. In addition, HEIs have recognized that faculty participation in scientific research is essential for faculty growth, such as receiving the most recent information, staying abreast of the most recent research, and enhancing their skills. Iqbal et al. (2018) have emphasized that scientific research output is an essential performance metric for HEIs, prompting HEIs to prioritize the development of a research culture and encouraging faculty participation in research activities. In this context, Sultana (2020) suggested that the management of HEIs exerts substantial pressure on faculty members to increase their scientific research output. Participation in scientific research by faculty members is also beneficial for improving their job performance and altering their work behavior. In addition, Tang et al. (2000) explains that scientific research is one of the most important aspects of HEI success, which cannot be achieved unless faculty members improve their performance in teaching and scientific research. However, little study has been conducted to determine what factors influence the research culture of higher education institutions and what effect these characteristics have on faculty members' work performance in terms of task, contextual, and counterproductive research behavior. Consequently, this study aims to investigate the impact of research infrastructure, organizational instrumentality, and knowledge generation on research culture and the work performance of faculty members in terms of task, contextual, and counterproductive behavior. This study aims to analyze the mediating function of research culture between research infrastructure, organizational instrumentality, knowledge generation, and faculty members' job performance in Saudi Arabian higher education institutions.

2. Literature Review

2.1 Job Performance

The level of experience or knowledge gained by an employee makes a difference in how well they fulfill their work duties. The vast majority of studies believe that increasing the amount of time spent on a specific job initially boosts performance and then progressively achieves upper levels of effectiveness (Yao et al., 2022). When an individual is still in the learning phase of skill acquisition, their performance is dependent on controlled processing, which may be defined as the accessibility of declarative knowledge and the efficient allocation of limited attentional resources. When it comes to the later procedure, an individual's performance relies heavily on their capacity for automatic processing, comprehension of technical concepts, and psychomotor talents (Boogert et al., 2018).

Van Rheenen et al. (2020) distinguish the transition from maintenance to identifying the basic job operations. There is a shift that takes place when new personnel begin their positions. The transition occurs when individuals are expected to possess specific skills and knowledge to execute their jobs. Intellectual capacity is of vital importance during this transitional period. In the maintenance phase, dispositional elements such as inspiration, curiosity, and ethics become increasingly significant, while cognitive capacity becomes unimportant.

Boogert et al. (2018) state that there is no consistent pattern of performance progression across time. This finding is further confirmed by Sultana (2020), who argues that the transformation of performance over time is inconsistent because various employees exhibit distinct patterns of intra-individual change. This conclusion is further bolstered by the lack of a consistent pattern of performance development over time. Changes in an employee's psychophysiological state during their work, which may impact their capacity for processing information, may also contribute to inconsistent job performance.

Variables such as long work hours, interruptions in the circadian cycle, and exposure to stress can cause a change in the psychophysiological state of an employee. These causes ultimately result in employee tiredness and a decrease in activity level. However, it is not always the case that a person's performance will be negatively affected by being in one of these states. Although job performance is a multi-dimensional entity, there is little consensus on quantifying job success. Rotolo et al. (2018) discovered that a person's job performance consists of both task and contextual performance. However, according to Park and Park (2019), work performance consists of a task, contextual and adaptive. Kalinnikova et al. (2020) classified job performance into four dimensions: task performance, contextual performance, counterproductive behavior, and adaptive performance.

-2.1.1 Task Performance

One definition of task performance is the efficiency with which job incumbents contribute to the technological core of the organization (Hartini et al., 2019). As previously stated, various opinions have been expressed regarding the impact of individual boundary-spanning behavior on performance. As a result of their responsibilities, boundary spanners may experience role overload. This is because the boundary spanning role itself requires an individual to perform externally directed behavior skillfully and comprehensively, handle many internal and external activities simultaneously, and maintain a balanced relationship between internal and external processes. (Kaiji et al., 2022).

2.1.2 Contextual Performance

Individuals should have stronger contextual performance when investing energy into their professional positions. Contextual performance refers to an individual's inclination to behave in ways that enhance an organization's social and psychological setting (Hartini et al., 2019). It is believed that an employee's level of engagement can be used as an indicator of their desire to put in extra effort to benefit their organization (Alzyoud, 2018). According to Crawford (2018), employees who put their selves into their professional roles are more likely to have a broader view of their function and to go beyond the official confines of their employment to help the business and the people inside it in general (Chen et al., 2018). As a result, we anticipated that the level of engagement in one's task would positively correlate with one's contextual performance.

2.1.3 Counterproductive Work Behavior

It is possible to conceptualize counterproductive activities in a variety of different ways. An overall strategy before the mid-1990s was to focus on individual dysfunctional behaviors without any notion of an overall concept. Studies on tardiness, workplace violence, workplace sabotage, theft, and absenteeism, for example, failed to recognize the commonality among these seemingly disparate behaviors (Baka, 2019). They were also unaware of this. In their typology of deviant conduct in organizations, Tziner et al. (2020) took a more comprehensive approach, proposing that deviance encompasses a variety of behaviors categorized by the kind of target (individual vs. organizational) and the intensity of the activity. Wan et al. (2021) were the first researchers to identify workplace bullying, cyber-loafing, workplace violence, organizational ethics, and sabotage. Their typology further germinated research ranging from bullying to cyber-loafing, workplace violence, organizational ethics, sabotage, and counterproductive workplace behavior (Song et al., 2021). Tziner et al. (2020) used the concept of organizationally specific norms to define workplace deviance as behavior that voluntarily breaches organizational standards and threatens the well-being of individuals and the organization. There are no moral standards to be found in this paradigm. But rather, workplace deviance is characterized in terms of the formal and informal norms established through procedures and policies. To be termed deviant behavior, this method states that it must potentially undermine the organization's well-being or its members, omitting social errors like bad manners.

2.2 Hypothesis Development

Faculty members' participation in research activities helps them upgrade their knowledge, but unfortunately, many faculty members are less inclined to participate in scientific research. In this regard, Iqbal et al. (2018) have highlighted that faculty members' involvement in scientific research in developed countries is high compared to developing countries. The possible reason for the low participation of faculty members in scientific research in developing countries could be poor or lack of research culture and infrastructure. In addition, Lee and Kuzhabekova (2019) suggested that faculty members and management of HEI should not focus on teaching activities but also create a research culture in the universities. In addition, Huang (2018) defines research culture as "Research culture can be ascribed as values and ideas that researchers use to handle research-related problems. It is the combination of all the activities, thinking, thinking, collaboration, and cooperation to promote the research in faculty members". Stupnisky et al. (2018) explained that promotion and recognition motivate faculty members to improve their teaching and research performance, and research culture plays an important role for faculty members in improving their research-related performance.

Any employee in the organization performs a certain task with certain expectations in mind, and when they perceive that a task will help them meet their expectations, they get more involved in those tasks. In this context, Khalid and Nawab (2018) highlighted that, like other employees, faculty members expect to receive compensation for their services. Therefore, faculty members are motivated to engage in research activities when they think their institutions contribute to scientific research. Li and Liu (2021) argued that corporations should assist and support employees in achieving their objectives. These organizational endeavors are known as organizational instrumentality. In this regard, Heneman Iii and Sandver (1983) proposed that firms should make every effort to bolster employees' confidence that their employers will assist them in achieving their own goals or be instrumental in achieving valued outcomes. In addition, Tang et al. (2000) noted that organizational instrumentality increases employee organizational commitment; hence, organizational instrumentality cannot be disregarded. Additionally, they discovered that job stability, extrinsic job happiness, and organization-based self-esteem impact organizational instrumentality. In addition, Summers et al. (1986) stated that managers play a significant role in promoting organizational instrumentality by enhancing employees' belief that the organization will help them attain their objectives.

Solans-Domènech et al. (2019) explained that universities have been encouraging their faculty members to get involved in research activities and access research's impact on society. In this regard, Berlemann and Haucap (2015) explained that universities have been providing all possible resources, including providing research funds, developing research culture, and accessing research impact. Therefore, when HEIs provide all these resources to produce knowledge, HEI creates a research culture that helps faculty members improve their job performance in terms of task, contextual and productive behavior. In addition, research culture is another important factor that helps HEI develop research culture. In this regard, Fabre et al. (2021) defined research infrastructure as "Research infrastructures (RIs) are facilities, resources, systems, and services needed by scientific communities to carry out large-scale research in cutting-edge fields." They argued that research infrastructure plays a vital role in enhancing scientific performance. An important point to consider is that research infrastructure should be based on modern tools and equipment required in current research projects; otherwise, old and outdated research tools and equipment may not promote research culture among HEIs, as observed by researchers of this study. In addition, when HEIs spend sufficient resources to upgrade research infrastructure or provide financial support to the researchers, such as buying research supplies or equipment, analysis software, research publication facilities, and funding for data collection, these facilities help them promote research culture among HEI's. Therefore, when HEIs provide suitably and required research infrastructure, it develops a research culture among HEI, which helps to improve faculty members' job performance in terms of task, contextual and work behavior.

According to Badrianto and Ekhsan (2020), performance results from several employee workplace practices. Researchers have identified various facets of job performance, including task performance, contextual performance, and unproductive work conduct (Sultana, 2020). In addition, Eliyana and Ma'arif (2019) stated that job performance is not determined by the consequences of acts but by workplace behavior and activity. Moreover, Limon and NartgÜN (2020) noted that instructors are an integral part of educational institutions and that HEIs want them to perform effectively on all dimensions of the job (task, contextual, and productive behavior) to be competitive in the market. In this regard, Özdemir and Gören (2017) defined teachers' work performance as "contributing to the attainment of educational goals and objectives."

Additionally, Goldschmid (1978) claimed that colleges evaluate the work performance of their faculty based on their teaching abilities, intellectual output, and societal contribution. Therefore, intellectual contribution, such as scientific research, is a significant criterion for assessing the work performance of faculty members, and without organizational support, faculty members cannot perform better in this area. Afif (2018) stated that HEIs should help faculty members in these activities. When faculty members think that their institutes would provide support whenever and wherever needed, they become more committed to their jobs and exhibit higher levels of job performance.

Hypothesis:

H1: Research culture mediates the relationship between knowledge production and task performance.
H2: Research culture mediates the relationship between knowledge production and contextual performance.
H3: Research culture mediates the relationship between knowledge production and counterproductive work behavior.
H4: Research culture mediates the relationship between organizational instrumentality and task performance.
H5: Research culture mediates the relationship between organizational instrumentality and contextual performance.
H6: Research culture mediates the relationship between organizational instrumentality and counterproductive work behavior.
H7: Research culture mediates the relationship between research infrastructure and task performance.
H8: Research culture mediates the relationship between research infrastructure and contextual performance.
H9: Research culture mediates the relationship between research infrastructure and counterproductive work behavior.

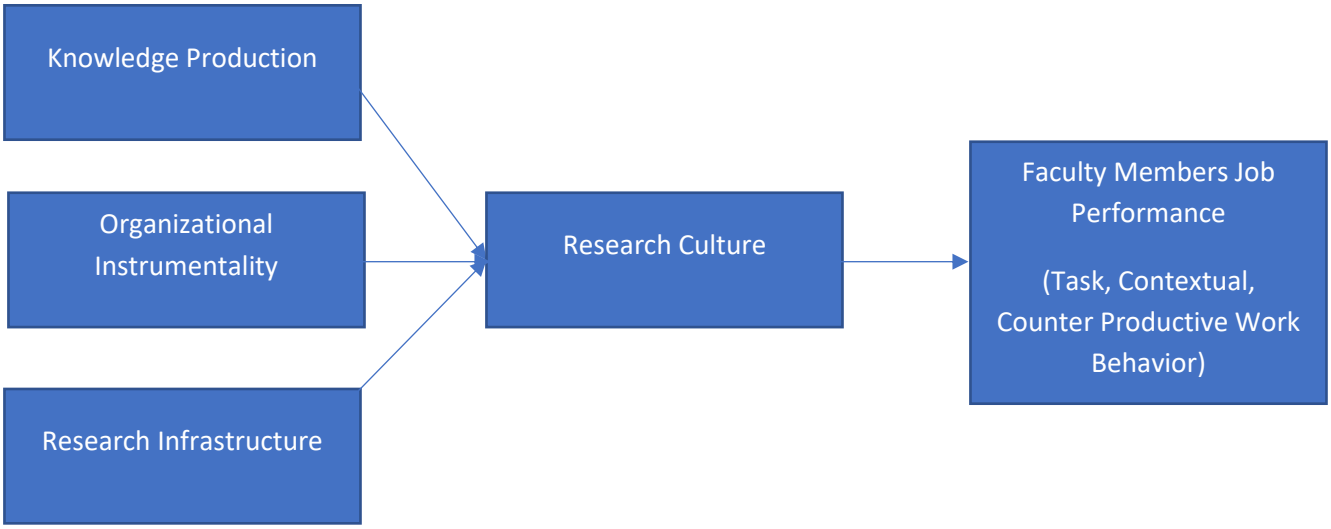

Figure 1. *Conceptual Framework*

3. Methodology

The current study is quantitative in nature, and the unit of analysis is faculty members working in HEIs in Saudi Arabia. A survey method was used to collect the data from faculty members using a simple random sampling method. The questionnaire was divided into two sections. In the first section, respondents were asked to provide demographic details, including age, gender, qualification, number of years' experience, etc. In the second section, respondents were asked to respond based on 5-point Likert scales. 500 questionnaires were distributed, and only 254 completed questionnaires were returned with a response rate of almost 50%. Out of 254 questionnaires, 5 were discarded due to illogical responses, and reaming 249 completed questionnaires were included in the analysis. Structural Equation Modelling (SEM) was used to analyze the data with Amos 16. SEM is a two-step approach in which measurement model fit is obtained in the first step and structural model fit in the second step. In addition, the reliability and validity of the measurement scale were obtained.

3.1 Measurements

Faculty Job performance was measured based on 3 dimensions: task performance, contextual performance, and counterproductive work behavior. This scale consisted of 17 items developed by Sultana (2020). The task performance scale consisted of 3 items which include 1- "Enough proficient in his/her teaching skills while delivering lectures?" 2- "Uses effective teaching methodology to facilitate student's experience" 3- "Communicates intelligibly with others during school hours." The contextual performance scale consisted of 4 items which include

1- "Praises and congratulates colleagues when awarded honors."
2- "Discusses and communicate with colleagues about teaching and classroom management."
3- "Devote extra time for the overall development of students."
4- "Put forward constructive suggestions for improving department or school."

Counter productive work behavior scale consisted of 10 items which includes

1- "Purposely waste school materials/supplies."
2- "Comes to school late without permission."
3- "Tries to look busy while doing nothing."
4- "Blame other employees for errors at work."
5- "Takes school supplies and tools home without permission."
6- "Can only work efficiently in a comfortable environment."
7- "Purposely works slowly when things need to get done."
8- "Finds supervisory task hectic."
9- "Takes longer to complete his/her work tasks than planned."
10- "Makes fun of other employees' personal life."

Organizational instrumentality was measured using 12 items adapted from Tang et al. (2000). Scale items include

1- "My university treats employees fairly in its performance appraisal process and discharge/discipline policies."
2- "My university improves employees' wages and hours."
3- "My university maintains equity in administering the compensation system."
4- "My university improves working conditions for employees."
5- "My university continues to provide employees with a safe place to work."
6- "My university improves grievance procedures."
7- "My university improves workers' job security."
8- "My university continues to provide good fringe benefits."
9- "My university makes the job more interesting and challenging."
10- "My university allows employees to influence company-wide policies and the organization-employee relationship."
11- "My university increased open communications" and
12- "My university allows employees more participation in decision making."

Knowledge production was measured using 10 items adopted from Solans-Domènech et al. (2019). Scale items include

1- "I like Presenting research findings in abstracts"
2- "I like Presenting research findings in Journal Articles."
3- "I like Presenting research findings in books or book chapters."
4- "I like Presenting the research findings in educational materials."
5- "I like Presenting research findings to the public/patients/end-users."
6- "I like Presentations to the project volunteers."
7- "I like Being mentioned by the media or the subject of a press release/conference."
8- "I like Published through social networks."
9- "I like Published in influential blogging sites."
10- "I like Concerts, recordings, or music hall presentations."

Research infrastructure was measured using 21 items adopted from Tytherleigh* et al. (2005)

1- "there is an administrative structure in your department (i.e., research director/administrator) to assist in research activities."
2- "breakdowns/maintenance of your research equipment is good."
3- Dept. of Information Technology (DoIT is responsive to my computing needs."
4- "services of the shops and commissaries on campus sufficient to meet my needs for fabrication and repair of research equipment."
5- "facilities to support research involving human subjects sufficient for my research needs."
6- "facilities to support research involving animals sufficient for my research needs."
7- "I'm aware there is insurance coverage for research equipment."
8- "physical plant failures have affected my research."
9- "I have sufficient laboratory space, excluding office space."
10-"I'm satisfied with the current laboratory/research space."
11- "Backup power is important for my research."
12- "My laboratory and office are secure from theft."
13- "quality of (lab) construction/renovations is good"
14- "maintenance of research-related equipment is good."
15- "I have sufficient computing power (hardware/software) for your research."
16- "My institute often provides a new computer (for research purposes)."
17- "My department or school/college has spare computing equipment to be loaned."
18- "adequate supply of software available to conduct my research."
19- "data links on campus and off-campus sites adequate in data transmission rate."
20- "I have access to high-capacity scanners and laser printers."
21- "I have easy access to teleconferencing and smart conference facilities".

The research culture scale was measured using 11 items adopted from Iqbal et al. (2018). Scale items include

1- "I have the facility to exchange information with my colleagues through informal meetings."
2- "Opportunities to become involved in research activities are provided in our department."
3- "Sharing of ideas with other colleagues to succeed in the research projects is provided in our department."
4- "Department is very supportive of providing opportunities in research. (Articles, Projects)"
5- "Research issues are communicated by Dean/ Director/Head of Department."
6- "Faculty members exchange information with colleagues through formal meetings."
7- "Continues guidance is provided for research skills."
8- "Seminars are arranged in the department to enhance research skills of faculty."
9- "Faculty members exchange information with colleagues through email."
10- "Facilities to collaborate and access local and international researchers are available in the department."
11- "Faculty members exchange information with colleagues through Cellphone, letters, and Intercom."

4. Analysis and Results

After the data had been collected, a previously established theoretical model performed an analysis utilizing the data. The covariance matrix serves as an input for the SEM analysis approach, which also leverages the maximum likelihood estimation technique. The Structural Equation Modeling (SEM) and Amos 16.0 programs were used for hypothesis testing. Before determining the model fit, each scale's internal consistency (Cronbach's Alpha) was examined to determine its reliability. The dependability of the scales is determined if the value of Cronbach's Alpha exceeds the 0.70 thresholds (Dash & Paul, 2021). Table 1 displays Cronbach's Alpha values ranging from 0.70 to 0.78 for all scales, establishing the internal consistency (reliability) of each scale utilized in the study.

Table 1. *Reliability of the Scale*

Constructs	Internal Consistency
Knowledge Production	0.74
Organizational Instrumentality	0.71
Research Infrastructure	0.73
Research Culture	0.78
Faculty Members' Job Performance	0.70

The demographic profile is displayed in Table 2 below. According to the demographic analysis, it is inferred that 74.2% of the respondents are male, and 25.7% are female. About 71.0 % of the respondents are more than 40 years of age, whereas rest, 29%, belongs to age groups less than 40 years. Similarly, most respondents have master's and Ph.D. degrees, i.e., 34.9% and 64.2%. Likewise, 27.7% of respondents have less than 5 years of experience, 32.5% have 6 to 10 years of experience, and 39.7% have 11 years and above experience.

Table 2. *Demographic profile*

Demographics	No. of Supervisor/Managers	Percentage
Gender		
Male	185	74.2
Female	64	25.7
Age		
18-28 years	15	6.0
29-39 years	57	22.8
40 and above	177	71.0
Education		
Graduates	0	0
Masters	87	34.9
PhD	160	64.2
Others	2	0.8
No. of years of experience		
less than 5	69	27.7
6-10	81	32.5
11 and above	99	39.7

Table 3. *Measurement Model fit*

Overall Model Measure	Overall Model Score	Acceptable Model Fit	Acceptable Baseline
CFI	0.901	Passed	≥0.90
AGFI	0.810	Passed	≥0.80
RMSEA	0.031	Passed	< 0.10
CMIN/DF	2.74	Passed	< 3
TLI	0.919	Passed	≥ 0.89
IFI	0.928	Passed	≥ 0.90

Table 4. *Structural Model fit*

Overall Model Measure	Proposed Model	Acceptable Model Fit	Acceptable Baseline
CFI	0.914	Passed	≥0.90
AGFI	0.847	Passed	≥0.80
RMSEA	0.048	Passed	< 0.10
CMIN/DF	2.57	Passed	< 3
TLI	0.914	Passed	≥ 0.89
IFI	0.919	Passed	≥ 0.90

The assumptions made regarding measurement model results are laid out in Table 3, which can be found below. Confirmation of the model fit test on full models that are good fits according to the criteria set forth. When constructing a model of research causality with structural relationships, the structure model is the tool of choice. The following values were obtained from the goodness-of-fit test of measurement model: AGFI = 0.810, CFI = 0.901, TLI = 0.919, IFI = 0.928, CMIN/DF = 2.74 and RMSEA = 0.031. Similarly, Table 4 contains the values were obtained from the goodness-of-fit test of structural model: AGFI = 0.847, CFI = 0.914, TLI = 0.914, IFI = 0.919, CMIN/DF = 2.57 and RMSEA = 0.048. The requirements for the cut-off value have already been satisfied by the goodness of fit criteria. The research model is appropriate, and it satisfies all the standard criteria required for analyzing and validating the proposed hypothesis.

Table 5. *Summary of Effects*

Variables	Direct Effects	Indirect Effects	Total Effects
Knowledge production --> Research Culture	0.254	--------	0.254
Organizational Instrumentality --> Research Culture	0.101	--------	0.101
Research Infrastructure --> Research Culture	0.147	--------	0.147
Research Culture --> Task Performance	0.255	--------	0.255
Research Culture --> Contextual Performance	0.314	--------	0.314
Research Culture -- > Counter productive work behavior	0.287	--------	0.287
Knowledge production -- > Task Performance	---------	0.321	0.321
Knowledge production -- > Contextual Performance	---------	0.298	0.298
Knowledge production -- > Counterproductive work behavior	---------	0.281	0.281
Organizational Instrumentality -- > Task Performance	---------	0.301	0.301
Organizational Instrumentality -- > Contextual Performance	---------	0.327	0.327
Organizational instrumentality -- > Counterproductive work behavior	---------	0.401	0.401
Research Infrastructure -- > Task Performance	---------	0.398	0.398
Research Infrastructure -- > Contextual Performance	---------	0.347	0.347
Research Infrastructure -- > Counterproductive work behavior	---------	0.369	0.369

Table 6. *Result of Analyses and Hypotheses*

	Hypotheses	P-value	t-value	Accept or Reject
H1	Research culture mediates the relationship between knowledge production and task performance.	0.000	3.67	Accept
H2	Research culture mediates the relationship between knowledge production and contextual performance.	0.003	2.99	Accept
H3	Research culture mediates the relationship between knowledge production and counterproductive work behavior.	0.138	1.49	Reject
H4	Research culture mediates the relationship between organizational instrumentality and task performance.	0.002	3.22	Accept
H5	Research culture mediates the relationship between organizational instrumentality and contextual performance.	0.047	1.99	Accept
H6	Research culture mediates the relationship between organizational instrumentality and counterproductive work behavior.	0.013	2.50	Accept
H7	Research culture mediates the relationship between research infrastructure and task performance.	0.001	3.37	Accept
H8	Research culture mediates the relationship between research infrastructure and contextual performance.	0.224	1.22	Reject
H9	Research culture mediates the relationship between research infrastructure and counterproductive work behavior.	0.000	4.87	Accept

*Significance Level ($P < 0.05$)

Table 5, Table 6 and Figure 2 present the results of the analysis. The findings of this study indicated that research culture mediates the relationship between knowledge production, organizational instrumentality, research infrastructure and faculty member job performance (task performance, contextual performance, and counter productive work behavior). Therefore, H1 (t-value = 3.67, p-value < 0.05), H2 (t-value = 2.99, p-value < 0.05), H4 (t-value = 3.22, p-value < 0.05), H5 (t-value = 1.99, p-value < 0.05), H6 (t-value = 2.50, p-value < 0.05), H7 (t-value = 3.37, p-value < 0.05), H9 (t-value = 4.87, p-value < 0.05) is accepted but H3 (t-value = 1.49) and H8 (t-value = 1.22) is rejected since research culture does not mediates the relationship between knowledge production and counter productive work behavior (H3) and research culture does not mediates the relationship between research infrastructure and contextual performance (H8).

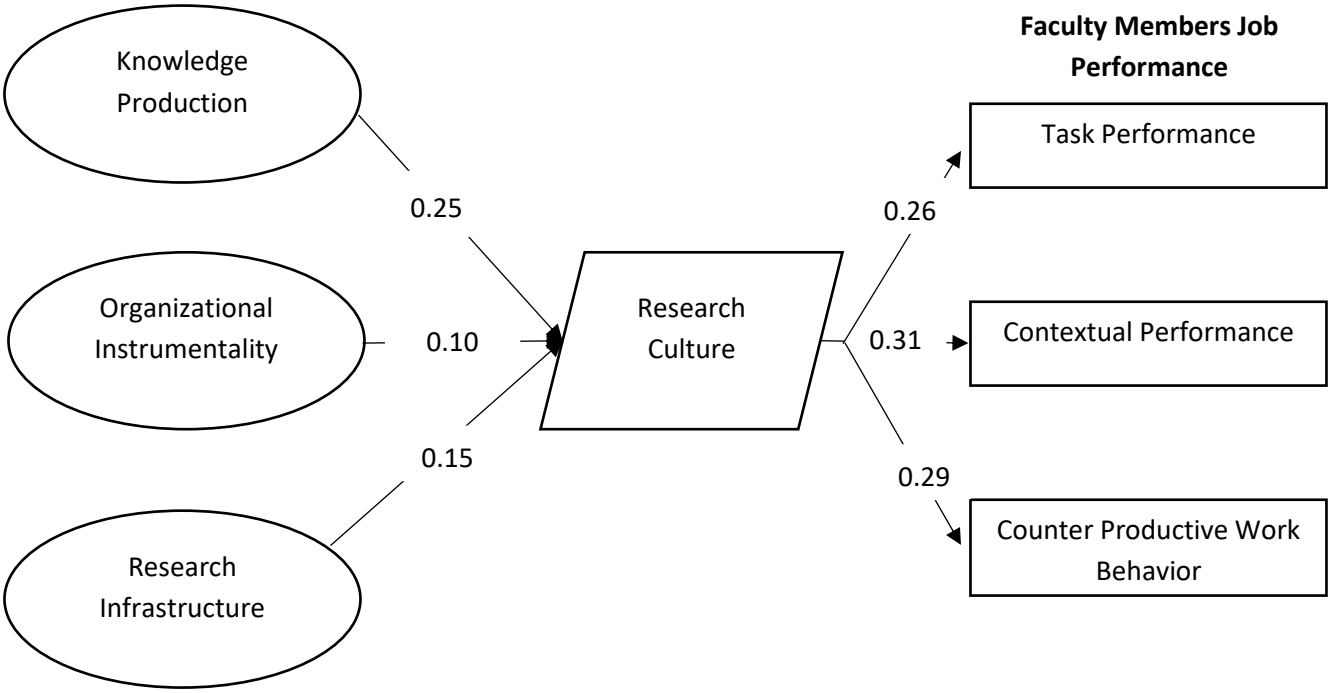

Figure 2: *Structural Model*

5. Discussion and Conclusion

Changing expectations of faculty members from HEIs have impacted faculty members' profiles and functions. In this context, Méndez and Cruz (2014) suggested that university culture is based on implicit or explicit beliefs, attitudes, and values similar to organizations. Therefore, university culture is heterogeneous and can be approached from various perspectives. Moreover, Schein (1984) noted that the research culture held by faculty members is shared and implicit. Researchers have struggled to comprehend what factors influence universities' or HEIs' research culture because they feel that research culture among HEIs influences faculty members' productivity (Bista et al., 2019). Consequently, this study aims to investigate the impact of research infrastructure, organizational instrumentality, and knowledge generation on research culture, which in turn influences the job performance of faculty members. In other words, this study aims to investigate the function of research culture as a moderator between research infrastructure, organizational instrumentality, knowledge generation, and faculty job performance (task, contextual and counterproductive work behavior).

The study's findings suggested that organizational instrumentality favorably influences the job performance of faculty members (in terms of task and context) except for counterproductive work conduct. When faculty members perceive that the university will be instrumental and receive recognition and rewards for their efforts and participation, they engage in research activities that foster a research culture and provide opportunities for faculty members to improve their tasks and contextual performance. According to the findings of previous researchers, there may be a difference in instrumentality between male and female faculty members. MottazI (1986) explained that women and minorities have different organizational expectations than men. In this regard,

Tang et al. (2000) discovered that women with low income predict high organizational instrumentality, whereas women with high job security predict high organizational instrumentality. This suggests that pay is not a significant factor for women, but job security is, and that focusing on pay will have no effect on women's organizational instrumentality. Rather, focusing on job security will help to improve organizational instrumentality among female employees.

This research revealed that knowledge generation influences the work performance of faculty members through the mediation of research culture. This study's findings indicate that knowledge generation influences faculty job performance, including task performance, contextual performance, and counterproductive work behavior, via research culture. These results support the paradigm of Solans-Domènech et al. (2019), in which they emphasize that scientific research is a major source of knowledge production, which may be useful for enhancing faculty productivity. Therefore, when faculty members engage in research activities, they have more opportunities to gain and exchange knowledge, but this may not be achievable without a strong research culture. Participation in scientific research by faculty members fosters a culture of research within the institution, and when all faculty members acquire and share knowledge based on scientific research, their task performance, contextual performance, and counterproductive work behavior all improve.

In conclusion, this study's findings indicate that research infrastructure assists faculty members in enhancing their task performance and counterproductive work behavior due to research culture. In other words, research culture does not act as a mediator between research infrastructure and the task performance and unproductive work behavior of faculty members. Surprisingly, this study found that research infrastructure has little effect on the contextual performance of professors through research culture. Therefore, no mediation was discovered between research infrastructure and the contextual performance of faculty members as mediated by research culture. These findings confirm the claims of Fabre et al. (2021), who argued that modern and efficient research infrastructure might assist faculty members in increasing their productivity. It also seems logical that when HEIs provide better research infrastructure, it creates and develops a research culture. When faculty members engage in scientific research using modern research infrastructure, it equips them with knowledge, skills, and abilities that improve their job performance and counterproductive work behavior.

6. Recommendations

There are various recommendations for policymakers, academic members, and management of higher education institutions based on the study's findings. Without modern research infrastructure, it will be difficult for HEIs to build a research culture, and faculty members will not be able to gain and exchange scientific information, which is essential for the improved task and contextual performance. Secondly, HEIs may not be able to reap the benefits of knowledge production until they have the knowledge or information to register the copyright, patents, etc., on various platforms. Once faculty members obtain a license or copyright based on their knowledge creation, a research culture is established in the institute, and other faculty members begin to participate in research activities, enhancing their task and contextual performance. Therefore, the management of higher education institutions should organize training sessions, seminars, and workshops to stimulate knowledge production. Lastly, the administration of HEIs should recognize and reward faculty members for their participation in research activities. In this regard, Khalid and Nawab (2018) said that awards are vital for motivating employees to perform better, and since faculty members are also employees, they are similarly motivated to receive prizes and recognition. These rules will convey to faculty members that their institution is instrumental and that their engagement in research activities will assist them in achieving their goals. Therefore, organizational instrumentality towards establishing a culture of research will foster a culture of research and enhance the task performance, contextual performance, and counterproductive work behavior of faculty members.

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