

Management of Resources of Research Center Managers at Isabela State University, Philippines

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ABSTRACT: This study explores the profiles, and perceptions of research center managers at Isabela State University using a descriptive survey research design. Data were gathered from 30 research centers through structured questionnaires and semi-structured interviews. Quantitative analysis employed descriptive statistics and inferential tests. The findings reveal a female predominance among managers (53.3%) and a young workforce, with 68% aged 21-30. Most managers have over two years of experience and manage with a varied workload. Managers generally agree on effective resource management practices, particularly in time, financial, human resources, and materials/equipment management. Significant perceptual differences are influenced by gender, with female managers rating financial and human resources management higher, and workload, with higher satisfaction reported by those with 12 FTE units.

KEYWORDS: Funding Acquisition, Management of Resources, Operational Challenges, Research Centers, SDG 4

I. INTRODUCTION

Research is now a fundamental aspect of higher education, playing a crucial role in the global recognition of universities. With a focus on research, many universities have established specialized research centers, contributing significantly to various fields such as science, engineering, medicine, arts, and policies. These centers often lead to the formation of spin-off companies and attract collaboration and funding, driving societal progress.

Establishing and nurturing a research center is a complex process (Tansey and Stembridge, 2005), often diverging from initial plans and requiring adept management (Abbas and Asghar, 2010). While these centers offer numerous benefits like aiding faculty recruitment, fostering collaboration, and securing research resources, they also pose management challenges and tensions for institutional leaders (Mallon, 2006). Philbin (2011) highlights the importance of founders' motivation and entrepreneurial skills in bringing together university academics and external partners, particularly in the early stages of a center's development. Glied *et al.* (2007) identify key challenges faced by research centers, including fiscal sustainability, faculty recruitment and retention, and leadership stability. Failure to address these challenges can lead to the downfall of a center. Overall, effective management and strategic planning are crucial for the success and longevity of research centers.

In the Philippines, there has been a gradual increase in the number of university-based research centers (UBRC) over the past decade. Specifically, Region 2 has also experienced a rise in research center numbers. Within the Isabela State University system, there are Thirty-One (31) research centers, each with its distinct focus area. These centers are established through board resolutions by the institution's governing body. The

institution expects these centers to operate in line with their stated mission and objectives, to strengthen the university's vision as a leading research institution. However, there is a lack of specific studies to evaluate the institutional status of these research centers (Craig et al. 2013), which are vital for their sustainability.

The study aims to investigate the significance of research center operations within the ISU system, offering valuable insights for enhancing their functionality. Specifically, it addresses the scarcity of literature on research center management in the northern Philippines, potentially informing strategies for sustaining such institutions through publications. Additionally, it analyzes the strengths and weaknesses of specific research centers, potentially leading to policy recommendations for their management. Furthermore, recommendations from the study may facilitate broader linkages, partnerships, and collaborations with institutions across different disciplines.

Research centers within universities serve various important functions, as highlighted by academic scholars. Firstly, they facilitate collaboration among researchers from different fields, helping to tackle complex issues that require diverse expertise. This collaboration boosts interdisciplinary research efforts (Sefton and Games, 2017). Secondly, research centers provide resources and infrastructure that enhance research productivity, leading to increased publications and patents (Wallace & Reinman, 2018). Thirdly, many centers are established to address pressing societal needs like public health or sustainable technology development (Dugstad & Eide, 2013). Additionally, research centers attract funding from various sources, supporting research initiatives (Hottenrott, 2011). Furthermore, they contribute to enhancing the university's reputation by showcasing its expertise and research capabilities (Nicholas *et al.*, 2015). Lastly, research centers offer valuable educational opportunities for students through internships and research assistantships (Patel *et al.*, 2021). Overall, the establishment of research centers aligns with the universities' missions. At Isabela State University, they were approved by the institution's executive board to address specific niche areas. By enhancing the academic standing of the university through research, the study contributes to improving the quality of education.

In summary, research centers face various challenges that impact their success, including funding, infrastructure, leadership, collaboration, government policies, competition, public perception, and economic conditions. Addressing these challenges is crucial for ensuring the effectiveness of research centers in universities.

1.1 The Management of Resources Domains for the Research Center Managers

Time management is the cornerstone of productivity and success in personal and professional realms. Efficiently allocating time ensures that tasks are completed on time, deadlines are met, and goals are achieved. Without effective time management, individuals may be overwhelmed, stressed, and struggling to keep up with their responsibilities. Moreover, proper time management allows for better prioritization of tasks, enabling individuals to focus on what truly matters and eliminate unnecessary distractions (Akhmarov *et al.*, 2023).

Financial management is particularly critical in managing research centers due to the unique financial challenges and opportunities they face. Research centers often operate with complex funding structures involving grants, sponsorships, donations, and institutional support (Harman, 2010). Financial management is essential for the success and sustainability of research centers. It ensures that resources are utilized efficiently, compliance requirements are met, and strategic objectives are achieved (Pagliacci & Rossi, 2018).

Human resources management is indispensable in research centers due to several key reasons. Firstly, these centers heavily rely on talented and motivated individuals to boost their scientific quests. Through practices like recruitment, training, and development, human management ensures that research centers attract and retain talent equipped with the necessary expertise and skills. Secondly, effective human management is crucial for developing a productive research team. Human managers play an essential role in team-building by

facilitating communication, resolving conflicts, and promoting a collaborative work environment (Gilley *et al.*, 2010).

Effective management of materials and equipment resources is also vital in research centers for facilitating new and innovative research and ensuring operational efficiency. Research centers rely on access to state-of-the-art materials and equipment to conduct experiments, analyze data, and innovate in their respective fields (Meder *et al.*, 2016). By maintaining accurate inventories, research centers can prevent shortages, minimize waste, and optimize resource allocation. Generally, it seeks to investigate the management of resource practices of research managers.

1.2 Research Objectives

Specifically, it is the objectives of the study to:

1. Describe the profile of research managers in terms of sex; academic rank or status of service; age; number of years as center manager; and, Full-time teaching (FTE) equivalent of designation.
2. Determine the level of agreement in the management of resources of the research center managers in terms of time, financial, human and materials, and equipment resources management.
3. Examine the difference in the management of research managers as perceived by themselves when grouped according to their profile.

1.3. Research Hypothesis

With consideration for the objectives of the study, the hypothesis statement is hereby tested:

Ho: There is no significant difference in the level of agreement in the management of research center managers as perceived by themselves when they are grouped according to their profile.

Ha: There is a significant difference in the level of agreement in the management of research center managers as perceived by themselves when they are grouped according to their profile.

II. METHODOLOGY

This study utilized a descriptive survey research design to explore the profiles and perceptions of research center managers at Isabela State University. The sample included 30 research center managers, selected through purposive sampling, with data collected via structured questionnaires and semi-structured interviews. The questionnaire covered demographics, and resource management practices, while interviews provided deeper insights. A Likert scale measuring the level of agreement was employed, with the following options: Strongly Agree (5), Agree (4), Slightly Agree (3), Disagree (2), and Strongly Disagree (1). The quantitative data were analyzed using descriptive statistics like frequency counts and inferential tests ANOVA to identify significant differences in perceptions based on various demographic factors. Reliability and validity were ensured through pre-testing, expert review, and reliability analysis, while ethical considerations included informed consent, confidentiality, and voluntary participation.

III. RESULTS AND DISCUSSIONS

3.1 The Profile of the Respondents

Table 1 provides an understanding of the demographics and characteristics of research center managers. In terms of sex representation, female managers dominate, comprising 53.3% of the total respondents, while male managers constitute 46.7%. The distribution of academic ranks among managers is evenly spread, with professors and associate professors each comprising 36.7% of the total, followed by assistant professors at 16%, and instructors at 10%.

An analysis of the age distribution reveals that the majority of research managers fall within the 21 to 30-year-old bracket, representing 68% of the total respondents. Those aged 31 to 40 constitute 20% of the respondents, while the 41 to 50 age group encompasses 12%.

Table 1. Profile of the Research Managers

Profile	Frequency (n=30)	Percent (100.0)
Sex		
Male	14	46.7
Female	16	53.3
Academic Rank		
Instructor	3	10.0
Assistant Professor	5	16.7
Associate Professor	11	36.7
Professor	11	36.7
Age		
26-35	5	16.7
36-45	11	36.7
46-55	14	46.7
Number of Years as Center Director/Manager		
Less than 2 years	6	20.0
2-4 years	8	26.7
5-8 years	3	10.0
9 and above	13	43.3
FTE		
6 units	15	50.0
9 units	8	26.7
12 units	7	23.3

Regarding experience in managing research centers, a significant share of managers (48%) possess more than 2 years of experience. Managers who have held directorship positions for two to four years make up 32% of the total, while those with 9 or more years of experience constitute 12%. Additionally, 8% of managers have managed research centers for 5 to 8 years.

In terms of faculty teaching equivalents (FTE) for the year 2023, the majority of center managers have an FTE equivalent of 6 units, representing 50% of the total respondents. Meanwhile, 26% of respondents have an FTE equivalent of 9 units, and 23.3% have an FTE equivalent of 12 units, reflecting the diverse workload distribution equivalent among managers.

3.2 Level of Agreement in the Management of Resources

For the research center managers' perceptions on the level of agreement on the management of resources across four domains: time, financial, human resources, and materials and equipment management. The following were noted.

In time management, managers agreed that they effectively complete tasks, prioritize and organize weekly tasks, meet deadlines, reassess goals, use time efficiently, and delegate tasks with an overall average rating of 4.14, indicating a general consensus of agreement.

In financial management, managers generally agreed on budget monitoring, proper accounting, grant utilization, periodic assessments, and contingency funds, comprehensive budgeting, and detailed expense tracking as key practices, with mean ratings between 3.55 and 4.35. They were less certain about the availability

of university operational budgets and the ease of budget disbursement. However, the overall mean rating is 3.84, indicating a general agreement in financial management (Table 2).

Table 2. The Level of Agreement in the Time and Financial Management Practices of Research Center Managers as Perceived by the Managers Themselves

Statements	Mean	DE
Time Management		
1. I can finish the task that needs to be done during the day.	4.00	A
2. I regularly prepare a weekly priority task.	4.13	A
3. I organize my task based on priority.	4.31	A
4. I can meet deadlines without rushing at the last minute.	4.00	A
5. I periodically re-assess my activities about my goals as research center director.	3.89	A
6. I am satisfied with the way I use my time.	4.10	A
7. Having a schedule or plan can help manage time more effectively.	4.24	A
8. It is important to ensure that your plan is realistic and achievable.	4.34	A
9. Monitoring the amount of time spent on each task can help manage time more effectively.	4.06	A
10. Delegating tasks can help manage workload more effectively.	4.33	A
Grand Mean	4.14	A
Financial Management		
1. Aside from external grants, the research center has allotted operational budgets from the university.	3.25	S
2. I regularly monitor the budget versus actual cost and expenditures reports.	3.67	A
3. Our research center has an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures, disbursement categories, and sources of funds.	3.55	A
4. Our approved grants are spent based on the approved Line Item Budget.	4.22	A
5. Periodic assessment of the research center's operation and spending is conducted.	3.89	A
6. I have no problem with the process of disbursing my allotted budget.	3.28	S
7. Outstanding balances are regularly updated and communicated to concerned authorities.	4.11	A
8. There is always a contingency fund for unforeseen expenses.	3.59	A
9. When developing a budget for a research center, it is important to take into account all sources of funding, including grants, contracts, and other revenue streams.	4.35	A
10. There is accurate expense tracking and accounting that requires detailed financial records with proper documentation such as receipts and invoices.	4.07	A
11. There is regular expense tracking and comparison with the budget to help research centers stay within financial limits and identify cost-saving opportunities.	4.10	A
12. I often get grants and contracts that can provide extra funds and supplement a research center's budget.	3.71	A
13. I am certain that tracking finances, grant success, and research impact is key to evaluating and improving a research center's performance.	4.13	A
Grand Mean	3.84	A

Legend: 2.50-3.49 = Slightly Agree (S); 3.50-4.49 = Agree (A); 4.50-5.00 = Strongly Agree (SA)

For human resources management, managers strongly agreed on the importance of a safe workplace and agreed on teamwork, clear goals, gender sensitivity, fair compensation, proper job placement, thorough recruitment, smooth staff transitions, merit-based selection, appropriate workforce size, detailed job descriptions, and effective talent recruitment, with mean ratings from 3.77 to 4.42, or general average of 4.26. It indicates that center managers generally concurred with the statements regarding human resources management.

In materials and equipment management, managers agreed on all statements, with mean ratings from 3.57 to 4.42, or a grand average of 3.67 (Agree). They affirmed periodic equipment maintenance, proper functioning, sufficient project equipment, available support, optimization of resources, effective layout, adequate equipment efficiency, reasonable lifespan, acceptable maintenance costs, and reasonable energy consumption. Overall, managers rated their management practices positively, particularly in workplace safety, financial tracking, and resource optimization (Table 3).

Table 3. The Level of Agreement in the Human and Materials and Equipment Management Practices of Research Center Managers as Perceived by the Managers Themselves

Statements	Mean	DE
Human Management		
1. Teamwork is a common practice in our research center.	4.42	A
2. Our team has clearly defined goals that relate to the goals and mission of the research center.	4.39	A
3. The center observes gender sensitivity and implements gender-focused policies.	4.33	A
4. The compensation of personnel is fair and appropriate.	4.37	A
5. The research center places the right person in the right job.	4.33	A
6. Adequate and relevant information about the research center and the job is provided to the candidate at the time of recruitment.	4.32	A
7. For turnovers of staff, there are measures for a smooth transition of work assignments for the outgoing and incoming staff of RC.	4.18	A
8. The selection of candidates in a research center is strictly based on his/her merit.	4.14	A
9. The workforce is well-dimensioned, it may not be over or understaffed.	3.77	A
10. Our personnel was given written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority, especially for all of the study leaders, research specialists/members, and staff.	4.10	A
11. Recruitment should ensure it has the right talent in place to achieve its goals and objectives.	4.27	A
12. Research center management should ensure a safe and healthy workplace for all employees.	4.51	SA
Grand Mean	4.26	A
Materials and Equipment Management		
1. There is periodic maintenance of equipment and devices (e.g. 5S).	3.72	A
2. The equipment and devices are working properly according to its specification.	3.78	A
3. There is enough equipment intended for the project.	3.55	A
4. Support for different processes is present and readily available (e.g. vehicles, software, special tools, etc.)	3.55	A
5. Optimization of the use of material and equipment resources is highly	3.68	A

observed.		
6. Proper layout of equipment for the smooth, safe, and systematic flow of work is observed.	3.71	A
7. The production rate and efficiency of our acquired equipment are adequate for our needs.	3.82	A
8. The expected lifespan of our acquired equipment is reasonable.	3.71	A
9. The maintenance costs associated with our acquired equipment are acceptable.	3.57	A
10. The energy consumption of our installed equipment and devices is reasonable.	3.64	A
Grand Mean	3.67	A

Legend: 2.50-3.49 = Slightly Agree (S); 3.50-4.49 = Agree (A); 4.50-5.00 = Strongly Agree (SA)

3.3 Significant Differences in Perceptions of Research Center Managers When Grouped According to their Profile

3.3.1 Managers' Management of Resources as Compared to Their Sex

The study investigates research center managers' perceptions of management practices, comparing responses by sex. In time management, both female and male managers exhibited similar perceptions, with no significant differences noted. This study concurred with Guoqing & Yong-xin (2000), wherein both female and male managers exhibited similar perceptions in time management. This is consistent with the finding that both groups share similar personal values (Watson, 1979).

In financial management, females showed stronger agreement with higher mean ratings compared to males, particularly on budget development and expense tracking, where a significant difference was found in regular expense tracking. This led to the rejection of the null hypothesis, indicating differing perceptions between sexes in financial management practices. These findings contradicted Goldsmith (1997), who found that men claimed to have more knowledge about financial investments and scored higher on a test of real investment knowledge. However, his studies and the present study collectively suggest that sex differences exist in financial management.

In human management, both sexes generally agreed, but females placed more emphasis on teamwork and a safe workplace compared to males. A significant difference in workforce dimensioning suggested sex influences perceptions of staffing adequacy, resulting in the rejection of the null hypothesis. Similar findings show that sex influence perceptions in workforce dimensioning. Brenner (1988) found that white females placed more importance on extrinsic work values than white males, while black males rated these values higher than black females. Beutell (1986) also identified significant sex differences in work values, with women rating certain values higher than men. These findings suggest that sex can influence perceptions of staffing adequacy.

Regarding materials and equipment management, female managers unanimously agreed on all items, whereas male managers agreed on two items and slightly agreed on the rest. Females highlighted periodic maintenance, functionality, sufficient equipment, and resource optimization, with significant differences in equipment functionality and resource optimization. These differences suggest the need for tailored management strategies to enhance resource utilization in research centers. For equipment management Mahalakshmi (2023) underscores the need for efficient equipment utilization in construction projects. Prajeesh (2016) and Prasannasangeetha (2015) both stress the importance of proper equipment management practices, with the latter specifically focusing on the role of equipment maintenance in construction project profitability.

3.3.2 Managers' Management of Resources as Compared to Their Ranks

For time management, instructors strongly agreed on task prioritization and agreed on most other items, while assistant and associate professors strongly agreed with all statements. Professors, who had the highest mean ratings, strongly agreed with two statements and agreed with the rest, but no significant differences were found across ranks, indicating similar time management practices.

For financial management, instructors generally agreed with most statements but slightly agreed or disagreed with a few, while assistant professors showed strong agreement with one statement and varied agreement with others. Associate professors and professors consistently agreed with most financial management practices, with professors having the highest ratings. However, no significant differences were noted across ranks, suggesting uniform financial management practices.

In human management, instructors strongly agreed with most statements and agreed with others, while assistant professors, associate professors, and professors consistently agreed with all or most statements. Instructors had the highest mean ratings, but no significant differences were found across ranks, indicating consistent human management practices.

Regarding materials and equipment management, instructors and associate professors slightly agreed with all statements, whereas professors agreed with all items. No significant differences were observed, indicating similar practices across academic ranks. These findings suggest that academic rank does not significantly impact management skills in research centers, highlighting the need for further research to explore other influencing factors.

These findings align with Samson's (1984) study, suggesting academic rank does not impact management skills significantly, highlighting the need for further research to explore other influencing factors.

3.3.3 Managers' Management of Resources as Compared to Their Age

For center managers' perceptions of management practices across different age groups. In time management, managers aged 26 to 35 generally agreed on prioritizing tasks and organizing work, but slightly agreed on completing tasks within the day and satisfaction with time usage, unlike those aged 36 to 55 who agreed on all aspects, showing significant differences in time usage satisfaction. In financial management, younger managers (26-35) showed mixed agreement on budget and expense tracking, whereas older groups (36-55) consistently agreed on most statements, yet no significant age-based differences were found.

In human management, younger managers emphasized mission alignment and workplace safety, while older managers consistently agreed on teamwork, gender sensitivity, fair compensation, and staffing, with no significant age-based differences. For materials and equipment management, younger managers slightly agreed on all items, whereas older managers agreed, highlighting maintenance, functionality, and resource optimization, again with no significant differences found across age groups. Overall, age influenced time management perceptions but not financial, human, or materials/equipment management practices.

3.3.4 Managers' Management of Resources as Compared to Their Years of Experience

In time management, significant differences were found, with less experienced managers (under 2 years) having varied levels of agreement on task prioritization and goal assessment, while more experienced managers (5+ years) showed stronger agreement on these aspects, indicating experience influences time management perceptions. In financial management, perceptions were consistent across all experience levels, with no significant differences.

Human management revealed significant differences in teamwork perceptions, with less experienced managers showing varied agreement compared to more experienced ones, suggesting experience impacts human resource management. In materials and equipment management, no significant differences were observed, indicating experience does not significantly influence these perceptions.

3.3.5 Managers' Management of Resources as Compared to Their FTE

In time management, significant differences were found, with managers with 12 FTE units showing the highest satisfaction in areas such as task completion, prioritization, scheduling, realistic planning, and task delegation. In financial management, managers with 12 FTE units also showed higher satisfaction with budget adherence, financial assessments, and funding source considerations. Human resource management practices varied significantly as well, with 12 FTE managers expressing the most satisfaction with teamwork, goal alignment, gender sensitivity, and fair compensation, although there were concerns about turnover measures and

workforce dimensions. In materials and equipment management, 12 FTE managers again showed higher satisfaction, particularly in maintenance, support, layout efficiency, and energy consumption. These findings suggest that FTE allocation significantly influences managers' perceptions of time, financial, human resources, and equipment management, highlighting the importance of optimized resource distribution for enhancing management efficiency.

IV. CONCLUSIONS

Based from the findings, the following are concluded:

1. The study reveals that female managers predominate in research centers, comprising 53.3% of the respondents. Academic ranks are fairly distributed with professors and associate professors each making up 36.7%, while assistant professors and instructors represent 16% and 10%, respectively. The majority of managers are aged 21-30 (68%), and nearly half (48%) have over two years of managerial experience. The faculty teaching equivalents (FTE) show that 50% manage with 6 units, indicating a varied workload.
2. Research center managers generally agree on resource management. Managers rate time, financial, human resources, and materials/equipment management positively, highlighting task prioritization, budget monitoring, and equipment maintenance.
3. For the managers' management of resources as compared to their profile, female managers tend to rate financial and human resources management higher than their male counterparts, particularly in budget tracking and teamwork. This highlights gender-based perceptual differences in certain managerial aspects.

In terms of ranks, it shows no significant differences, indicating that rank does not significantly affect management practices. All ranks generally agree on time, financial, human resources, and materials management, suggesting uniformity in managerial skills across academic positions.

While for age, it influences perceptions in time management, with younger managers (26-35) showing less satisfaction compared to older managers (36-55). However, no significant age-based differences are found in financial, human resources, or materials/equipment management, indicating similar perceptions across different age groups.

For experience, it impacts time management perceptions, with more experienced managers showing higher satisfaction. However, financial, human resources and materials/equipment management practices do not show significant differences across experience levels, suggesting consistent practices regardless of experience. In terms of the designation equivalent, managers with 12 FTE units report higher satisfaction in all management areas compared to those with fewer units, highlighting the influence of workload distribution on managerial perceptions.

These conclusions offer useful practical insights for improving the management and operation of research centers, such as resource management, gender-sensitive practices, and addressing operational challenges. It also contributes to theoretical knowledge by exploring organizational behavior, management practices, and gender dynamics in academic research environments.

V. RECOMMENDATIONS

1. Females and males have significant differences in equipment functionality and resource optimization. These differences suggest further studies on management strategies to enhance materials and equipment resources utilization in research centers.
2. For academic rank that does not significantly impact resource management, there is a need for further research to explore other influencing factors.
3. It is also recommended that wider studies be considered in the study of management and practices that may add policy suggestions to improve the operation of research centers.

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