




The Role of Information and Communication Technology in Improving the Empowerment

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ARTICLE INFO	ABSTRACT
<p>Article History: Received 24 December 2022 Received in revised form 11 January 2023 Accepted 2 March 2023 Available online 8 March 2023</p>	<p>Nowadays, universities have undergone major changes due to the use of modern technologies and information technology. This has led to the adoption of a knowledge-oriented and scientific approach. The role of information and communication technology in the growth and development of society, including universities, is undeniable. With the proliferation of information technology, it is imperative to examine its influence on employees' job Empowerment process in an objective manner. The report maintains a clear and concise structure, presenting causal connections between statements while avoiding biased, figurative, or ornamental language. Technical terms are explained on first usage, and standard language with consistent terminology is employed throughout. This study aims to scrutinize the role of information and communication technology in advancing the Empowerment of administrative employees at Zahedan's Islamic Azad University. Appropriate spelling, grammar, and formatting features adhere to the recommended style guide, ensuring grammatical correctness and clarity of information. The study's statistical population consisted of 260 administrative staff from Islamic Azad University of Zahedan. 152 employees were selected utilizing Morgan's table method. To begin, the use of information technology within organizations was assessed. Following confirmation that it was implemented in the organizations being studied, the impact of information technology on employee empowerment was investigated. Indexes related to organizational employee empowerment were identified and categorized into six groups based on previous research. Questionnaires were utilized to collect the necessary data, which was ultimately analyzed through statistical testing and SPSS software. The results obtained indicate that the use of information technology at the Islamic Azad University of Zahedan has led to the empowerment of employees.</p>
<p>Keywords: Empowerment, Information Technology, Employees</p>	

1. INTRODUCTION

In the 21st century, it is self-evident that information and communication are of strategic significance. Information technology has impacted various aspects of our daily lives, and we are compelled to interact with various forms of information technologies [1]. Prior to the 1970s, it was widely held that providing advanced technologies to countries

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and organizations striving to enhance their potential and power was a straightforward path to growth and development. Many organizations have endeavored to equip themselves with cutting-edge technologies. Nevertheless, this notion was swiftly dismissed due to the accompanying debt and significant complications. It is now evident that implementing unsuitable technologies to enhance organizational efficiency will result in various indirect expenses for developing organizations [2]. Organizations striving for strength seek a framework or model that is tailored to their distinct requirements and culture. To effectively adopt and utilize information technology, organizations must analyse their capacity and capability to improve, as well as the cultural, organizational and economic factors involved [3].

Management experts concur that precise and appropriate implementation of information technology enhances the efficiency of both employees and managers within an organization. This leads to a clearer distribution of responsibilities and promotes responsiveness from staff and management, ultimately resulting in improved service delivery. Fundamental changes in the nature of information technology and its use worldwide are transforming individuals' attitudes toward improving their job skills and abilities. Meanwhile, empowering manpower is one of the most incredible approaches to human resource development and leads to the growth of an organization's workforce.

Empowerment is an ongoing process, with ever-increasing importance given that today's business development is reliant on aligning businesses with social changes, technological advancements, and demands from the competitive environment. Businesses require individuals who possess the ability to effectively utilize cutting-edge technologies, think innovatively, and enhance their products and services. There are various external factors that prompt organizations to motivate their employees, with one of the most significant being the impact of information technology in the workplace. The fast-paced development of technology is relevant in all aspects of organizations. In the present era of information technology, people's information literacy and the integration of modern technologies in various professions are key indicators of progress [4].

Human demands and requirements have significantly and rapidly shaped the information technology landscape, leading to the creation of numerous new necessities. The contemporary business landscape has been built on skilled and capable personnel within organizations.

Currently, information technology serves as a potent resource that can significantly enhance the effectiveness and productivity of employees. Due to the constant advancement of technology-based tools and their rapid adaptability to human needs, a new type of learning environment has emerged, one that is creative, active, inclusive, and interactive. Information is a crucial source of power in organizations; therefore, the ability to collect information, particularly data that plays a fundamental and strategic role, can serve to build a formidable database and to influence the organization [5].

Today, a multitude of studies have examined the impact of information technology on employees and other individuals. Notably, Ahmadi et al. (2011) have analyzed the influence of information technology education on employee productivity [6]. However, little attention has been paid to the impact of communication and information technology on enhancing the abilities of administrative staff and empowering employees. Islamic Azad University is a prestigious educational institution both within and beyond Iran, serving as one of the largest educational centers in the country. It is widely regarded as one of Iran's most reputable universities. Since Islamic Azad University of Zahedan has invested so much in information technology, this research is of great importance as it increases awareness of the role of communication and information technology in improving employee empowerment. Additionally, the review results can provide necessary strategies for the use of communication and information technology.

Therefore, this study aims to determine the impact of communication and information technology on the empowerment of employees at Islamic Azad University. The study will adopt an objective approach and avoid subjective evaluations. The information will be presented clearly with simple, concise sentences and logical connections between statements. Technical terms will be explained upon first use. The conventional academic structure will be followed, with factual and unambiguous titles. Clear and objective language, avoiding emotional and ornamental language, will be used throughout. The writing style will be formal, free from contractions, colloquial words, informal expressions, and unnecessary jargon. A balanced approach will be taken with precise

word choice and grammatical correctness. The spelling and grammar will be aligned with British English conventions, and a consistent citation and footnote style will be used.

In conclusion, Information and Communication Technology (ICT) plays a crucial role in empowering individuals and communities, particularly through enhancing access to information, improving education, and fostering social and economic participation [7]. The effective use of ICT can provide equal opportunities and help bridge the digital divide, which is especially important in rural and underserved areas. Furthermore, modern communication technologies facilitate the creation of support networks and raise social awareness, ultimately strengthening both individual and collective capacities [8].

2. LITERATURE REVIEW

The intersection of information and communication technology (ICT) and empowerment has garnered increasing scholarly attention. As the digital age continues to evolve, understanding how ICT contributes to both individual and community empowerment is critical. This literature review synthesizes various research findings that illuminate the multifaceted role of ICT in promoting empowerment across different contexts.

Bloom et al. (2013) conducted a comprehensive analysis demonstrating the distinct effects of information technology (IT) and communication technology (CT) on organizational structure. Their research indicates that effective use of these technologies can enhance decision-making processes and foster empowerment among employees by promoting better information flow and collaboration [9]. These findings suggest that organizations that leverage ICT not only improve their internal operations but also empower their workforce by providing them with the necessary tools to contribute meaningfully.

Heeks (2010) explored the broader implications of ICT on development, arguing that while ICTs hold promise for empowering marginalized communities, they also risk perpetuating existing inequalities if not implemented thoughtfully [10]. This duality points to a critical knowledge gap in understanding how to effectively harness ICT for empowerment without exacerbating social divides.

In the healthcare sector, Prey et al. (2014) conducted a systematic review on patient engagement facilitated by ICT in inpatient settings. They found that digital tools significantly enhance patient empowerment by enabling active participation in their health care [11]. This research highlights the potential of ICT to transform traditional health care models into more collaborative frameworks, thereby empowering patients.

Deng et al. (2016) examined the nuanced relationship between empowerment and marginalization in microtask crowdsourcing [12]. Their study emphasizes the role of value-sensitive design in ICT development, which can amplify the voices of less powerful individuals, thereby fostering empowerment in digital labor markets. Future research could explore how different design principles can enhance empowerment in various contexts.

Evangelista et al. (2014) analyzed the economic impacts of digital technologies across Europe, concluding that these technologies play a pivotal role in enhancing productivity and fostering empowerment among small and medium-sized enterprises (SMEs) [13]. This finding underscores the need for policies that support ICT adoption in SMEs to promote economic empowerment.

Leong et al. (2015) investigated the role of social media in community empowerment during crisis events, specifically focusing on the 2011 floods in Thailand [14]. Their findings indicate that social media platforms can facilitate real-time communication and mobilization, thereby empowering communities to respond more effectively to crises. This raises questions about the role of social media literacy in enhancing community resilience.

Schlachter et al. (2018) provided insights into voluntary work-related technology use during non-work hours, revealing that such practices can lead to increased employee empowerment and engagement [15]. However, this also introduces challenges regarding work-life balance, indicating a need for further exploration into how to optimize technology use for empowerment without leading to burnout.

Vlachokyriakos et al. (2016) introduced the concept of digital civics, highlighting how citizen empowerment can be enhanced through technology [16]. Their research suggests that engaging citizens in the design and

implementation of digital initiatives is crucial for fostering a sense of ownership and empowerment. This area remains underexplored, particularly regarding the best practices for citizen involvement in ICT projects.

Fitzpatrick (2023) examined the role of digital communications in improving health literacy among patients and practitioners [17]. The findings suggest that effective communication strategies utilizing digital platforms can empower patients to make informed health decisions. This highlights the need for further research into specific communication strategies that maximize empowerment in healthcare contexts.

Ye and Yang (2020) addressed the issue of the digital divide, focusing on mobile platform empowerment in rural areas [18]. Their work illustrates how mobile technologies can bridge gaps in access to information and services, empowering individuals in underserved communities. Future research should investigate the long-term impacts of such technologies on rural empowerment and development.

The reviewed literature underscores the potential of ICT to enhance empowerment across various domains, including organizational settings, healthcare, community engagement, and economic development. However, significant knowledge gaps remain, particularly regarding the equitable implementation of ICT and its effects on marginalized groups. Future research should focus on developing frameworks for effectively integrating ICT into empowerment strategies while addressing the risks of inequality and marginalization. Additionally, longitudinal studies examining the long-term impacts of ICT on empowerment in diverse contexts are warranted to provide deeper insights into this evolving field.

3. RESEARCH METHOD

The study is a descriptive survey in terms of its methodological approach and data collection tools, and applied research as its objective is to resolve specific problems within society. Technical terms have been explained when first used. The study adheres to conventional academic structure and follows consistent citation and footnote style and formatting features. The language used is objective, value-neutral, and grammatically correct, avoiding biased or emotional language. Field studies, interviews, and a questionnaire were the methods employed for data collection. The sentences and paragraphs follow a logical structure with causal connections between statements, and the vocabulary used accurately conveys the intended meaning. In this study, the research questionnaire was designed and subsequently distributed to a selection of employees, experts, and managers at the Islamic Azad University of Zahedan. Finally, precision of term will be adhered to where appropriate. The information technology questionnaire employed in this investigation was developed by the researcher and contains two distinct parts: the first investigates information technology and its impact (21 questions), whilst the second pertains to employee empowerment (15 standard questions). Technical abbreviations will be elucidated upon their first use. The language used is formal, clear and objective, with grammatical correctness being a key component throughout. A conventional structure will be employed, with frequent causal connections between statements to better ensure a logical flow of information. Biased language will be avoided, with hedging employed to underscore positions on subjects. The first section of this study reviews the extent to which information technology has been utilized, followed by an analysis of its impact on employee empowerment. The validity of the questionnaire was confirmed through the opinions of professors and experts, and its reliability was determined by calculating Cronbach's alpha (0.785), indicating a high correlation between the items.

This research consists of a descriptive survey. The study population comprises all administrative employees (260 employees) of Islamic Azad University in Zahedan. The sample size (152 employees) was estimated using Morgan's table. Of these, 147 employees fully completed the questionnaires. Data analysis was performed using SPSS at two levels - descriptive and inferential statistics. Linear regression statistical tests were utilized in the inferential statistics section based on the variables' type and the crucial information required for testing the research hypothesis.

3.1. Main hypothesis

Using information technology has an impact on the improvement of Empowerment of employees of Islamic Azad University of Zahedan.

3.2. Secondary hypotheses

1. Using information technology has an impact on the Professional development of employees of Islamic Azad University of Zahedan.
2. Using information technology has an impact on the Autonomy and freedom of employees of Islamic Azad University of Zahedan.
3. Using information technology has an impact on the Performance quality of employees of Islamic Azad University of Zahedan.
4. Using information technology has an impact on the increased knowledge and awareness of employees of Islamic Azad University of Zahedan.
5. Using information technology has an impact on the increased job opportunities of employees of Islamic Azad University of Zahedan.
6. Using information technology has an impact on the increased responsibilities of employees of Islamic Azad University of Zahedan.

3.3. Conceptual model of the research

Since any survey or field study needs a conceptual model and a mental map designed in the form of proper analytical tools, variables and the relationships between them, in the present study, the following model was developed by combining different models developed by different experts:

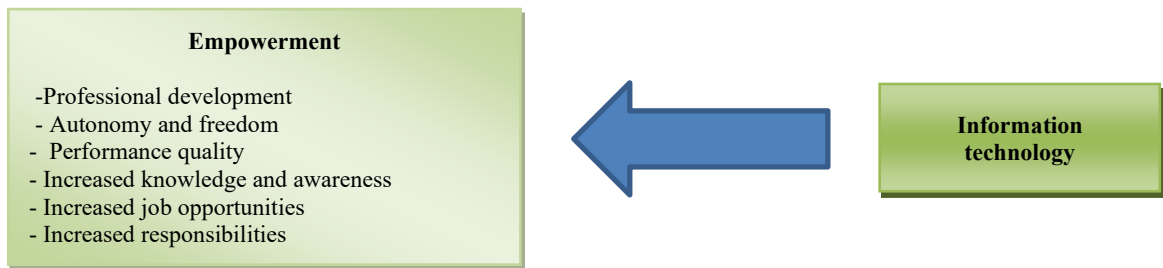


Chart 1. Conceptual model of the research

4. RESEARCH FINDINGS:

4.1. Main hypothesis:

Information technology has a positive effect on enhancing employee empowerment at Islamic Azad University of Zahedan. The goodness-of-fit of a regression model was analyzed to evaluate effectiveness, which is discussed below. The table below presents the proposed model for the relationship between the use of information technology (Y) and the improvement of empowerment (X) after investigating its adequacy indicators.

Table 1. Goodness of fit of regression model between Using information technology and Improvement of Empowerment.

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.216	0.047	0.038	9

The relationship between the independent variables and the dependent variable is 0.216. The R-square is 0.047, indicating that 4.7% of the variation in the use of information technology is predicted by the improvement in empowerment. Since this measure does not take into account the degrees of freedom, the adjusted R Square was used, which in this study is 3.8. According to the indices, the model was adequate.

Table 2. Regression equation of improvement of Empowerment

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	49.38	10.23	0.216	4.82	0.024
	Using information technology	0.374	0.163		2.29	
Dependent Variable: improvement of Empowerment						

The predictor featured in the regression equation plays a crucial role in the regression analysis displayed in Table 2. Empowerment improvement is determined by the following formula: The equation, utilizing unstandardized coefficients, is revealed. $49.38 + (0.374)$ Using information technology.

It can be inferred that a one-unit growth in each independent variable is associated with a corresponding increment in the dependent variable, according to the stated coefficient. Increasing the use of information technology by one-unit results in a standard deviation of 0.374 units improvement in empowerment, indicating a positive correlation between the two factors. The table displaying the regression coefficients also indicates the T-test for the independent variable, with a sig. value of 0.024, establishing a significant impact of information technology usage on empowerment improvement.

Sub-hypothesis 1: The utilization of information technology has an impact on the professional development of Islamic Azad University of Zahedan employees.

The effectiveness and goodness of fit in the regression model were analyzed below. To suggest a model for the relationship between information technology usage (Y) and professional development (X) after examining its adequacy indicators in Table 3, the model is presented.

Table 3. Goodness of fit of the regression model between Using Information Technology and Professional Development.

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.265	0.070	0.068	9.29

The correlation coefficient between the independent variables and the dependent variable is 0.265. R squared is 0.070, indicating that Professional development predicts 7% of the variation in Using information technology. As this measure does not take into account the degrees of freedom, adjusted R squared value of 6.8 was used in this study. Based on the indices, the model was deemed suitable.

Table 4. the regression equation of Professional development.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	66.50	9.27	0.265	5.17	0.049
	Using information technology	0.248	0.366		3.21	
Dependent Variable: improvement of Empowerment						

The regression equation's core is the inserted variable, which can be observed in Table 4. The equation employs unstandardized coefficients, and it is presented as follows:

Professional development = $66.50 + (0.248)$ Use of information technology. It can be concluded that an increase of one unit in each independent variable indicates an increase in the dependent variable based on the corresponding coefficient. In other words, an increase of one unit in the use of information technology results in a standard deviation increase of 0.248 units in professional development, indicating a positive relationship. The table displays the T-test for the independent variable's regression coefficients, with a sig. value of .049. The table displays the T-test for the independent variable's regression coefficients, with a sig. value of .049. This denotes that information technology usage has a significant impact on professional development.

Sub-hypothesis 2: The utilization of information technology impacts the autonomy and freedom of Islamic Azad University of Zahedan employees.

The effectiveness and goodness-of-fit of the regression model were analysed below. In the subsequent table, the adequacy indicators were examined to propose a model depicting the relationship between the utilization of information technology (Y) and autonomy and freedom (X).

Table 5. Goodness of fit of the regression model between Using information technology and Autonomy and freedom.

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.351	0.123	0.115	8.72

The relationship between the independent variables and the dependent variable is .351. The R square is .123, which shows that 12.3 percent of the variation in the use of information technology is predicted by autonomy and freedom. Since this measure does not take into account the degree of freedom, the adjusted R Square was used, which in this study is 11.5. According to the indices, the model was adequate.

Table 6. Regression equation of Autonomy and freedom

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	
	B	Std. Error	Beta			
1	Constant	43.75	7.53	0.351	5.80	0.000
	Using information technology	1.40	0.361		3.87	
Dependent Variable: Autonomy and freedom						

The fundamental component of the regression analysis is the variable inserted into the regression equation, which is illustrated in Table 6. The regression equation is given in terms of unstandardized coefficients, where Autonomy and Freedom = 43.75 + (1.40).

By utilizing information technology, it can be concluded that an increase of one unit in each independent variable, as per the written coefficient, leads to an increase in the dependent variable. In other words, an increase of one unit in the use of information technology is positively related to an increase of 1.40 units in autonomy and freedom, as indicated by a t-test for the regression coefficients presented in the table for the independent variable. The significance value of 0.000 confirms that using information technology has a meaningful effect on autonomy and freedom.

Sub-hypothesis 3: The use of information technology affects the performance quality of Islamic Azad University of Zahedan employees.

A regression model was analyzed to determine the effectiveness and goodness-of-fit, which will be discussed below. The following model proposes a relationship between using information technology (Y) and performance quality (X), considering its adequacy indicators in Table 7.

Table 7. shows the goodness of fit of the regression model between using information technology and performance quality.

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.393	0.155	0.152	9.27

The correlation coefficient for the relationship between the independent variables and dependent variable is 0.351. The R squared value of 0.123 indicates that 12.3% of the variance in the use of information technology can be attributed to autonomy and freedom. To take into account the degrees of freedom, the adjusted R squared was computed as 0.115. Based on the indices, the model performed acceptably.

Table 8. Regression equation of Performance quality

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	65.78	7.34	0.393	8.95	0.008
	Using information technology	0.422	0.440		0.985	
Dependent Variable: Performance quality						

The regression analysis core is represented by the inserted variable, visible in Table 8, with the regression equation being provided by unstandardized coefficients.

The equation for performance quality is $65.78 + (0.422)$ by utilizing information technology. It can be observed that with an increase in one unit of each independent variable, depending on its written coefficient, the dependent variable displays an increase. In other words, an increase of one unit in the use of information technology results in a 0.422 unit increase in the standard deviation of performance quality, indicating a positive relationship between the two variables. The table displays t-test results for the independent variable. The significance value of .008 signifies that the use of information technology has a significant impact on performance quality, supporting sub-hypothesis 4.

Sub-hypothesis 4: The use of information technology has an impact on the level of knowledge and awareness among employees of Islamic Azad University of Zahedan.

To measure its effectiveness, a goodness-of-fit analysis was conducted using a regression model, which will now be discussed. After investigating adequacy indicators in the table below, we propose a model for the relationship between using information technology (Y) and increased knowledge and awareness (X).

Table 9. Goodness of fit of regression model between Using information technology and Increased knowledge and awareness

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.421	0.177	0.169	8.27

The correlation coefficient between the independent variables and the dependent variable is 0.421. The coefficient of determination (R Square) shows that 19.9% of the variation in the use of information technology can be predicted by increased knowledge and awareness. Since this measure does not take into account the degrees of freedom, adjusted R Square was used, which in this study is 16.9. The model was deemed adequate according to the indices.

Table 10. Regression equation of Increased knowledge and awareness

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	43.25	8.24	0.421	9.25	0.000
	Using information technology	0.522	0.354		0.657	
Dependent Variable: Increased knowledge and awareness						

The central element of regression analysis is the inserted variable in the regression equation. Table 2 displays the regression equation consisting of unstandardized coefficients.

The regression equation displays that increased knowledge and awareness yields a rise of 43.25 in conjunction with a boost of 0.522 in information technology usage.

It can be inferred that an increase in one unit of either independent variable would result in an increase of the dependent variable, based on the specified coefficient. Increasing the usage of information technology leads to a 0.522 unit increase in the standard deviation of knowledge and awareness. The two variables have a positive relationship. The table for independent variables displays the t-test relating to regression coefficients. It shows that the sig. value is .000, meaning that using information technology has a significant impact on increasing knowledge and awareness.

Sub-hypothesis 5: The use of information technology has an impact on the increased job opportunities for employees of Islamic Azad University of Zahedan.

The effectiveness and goodness-of-fit of the regression model were analyzed, which will be discussed below. After investigating adequacy indicators in the table presented below, a model proposing the relationship between the use of information technology (Y) and increased job opportunities (X) is presented in

Table 11. Goodness of fit of regression model between Using information technology and Increased job opportunities.

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.381	0.145	0.140	9.32

The correlation between the independent variables and the dependent variable is equal to .381. The R Square result of .145 indicates that 14.5% of the variance in the use of information technology is explained by increased job opportunities. As this measure does not consider the degrees of freedom, an adjusted R Square value of 14 was utilized in this study. Based on the indices, the model was deemed satisfactory.

Table 12. Regression equation of Increased job opportunities

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig	
	B	Std. Error	Beta			
1	Constant	67.21	6.59	0.381	6.97	0.013
	Using information technology	0.473	0.398		1.02	
Dependent Variable: Increased job opportunities						

The inclusion of variables in the regression equation is fundamental to regression analysis, as demonstrated in Table 12, where the equation is provided in unstandardized coefficients.

Specifically, the equation is: Increased job opportunities = 67.21 + (0.473) Use of information technology.

It can be concluded that the dependent variable is increased by one unit for each independent variable increase, as determined by the written coefficient. Increasing usage of information technology is positively related to an increase in job opportunities, with the standard deviation of the latter increasing 0.473 units for every unit increase in the former. The table displays the t-test results for the regression coefficients of the independent variable, which supports the significance of the relationship. Specifically, using information technology has a meaningful effect on Increased job opportunities, supporting Sub-hypothesis 6.

The implementation of information technology affects the augmented responsibilities of employees at Islamic Azad University of Zahedan.

The regression model's goodness-of-fit in determining effectiveness is examined and discussed below. The adequacy indicators of the investigated relationship between using information technology (Y) and increased responsibilities (X), as outlined in Table 13, present the proposed model.

Table 13. Goodness of fit of regression model between Using information technology and Increased responsibilities

R	R Square	R Adjusted R Square	Std. Error of the Estimate
0.520	0.270	0.268	5.36

The correlation between the independent and dependent variables is 0.520. The coefficient of determination, R Square, indicates that 27% of the variation in the use of information technology can be predicted by increased responsibilities. As this statistic does not account for degrees of freedom, we utilized the adjusted R Square, which was 26.8 in our study. Our indices indicate that the model is sufficient.

Table 14. Regression equation of Increased responsibilities

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
		B	Std. Error	Beta		
1	Constant	55.69	4.38	0.520	9.83	0.000
	Using information technology	0.532	0.367		0.846	
Dependent Variable: Increased responsibilities						

Table 14 displays the regression equation with unstandardized coefficients, where the inserted variable is fundamental to regression analysis.

An increase of one unit in each independent variable, as defined by the respective coefficient, results in an increase of $55.69 + (0.532)$ units in the dependent variable. In other words, an increase of one unit in the use of information technology results in an increase of 0.347 units in responsibilities. The table displays t-tests that relate to regression coefficients for the independent variable, indicating a significant value of 0.000. This suggests a positive correlation, indicating that the use of information technology has a considerable impact on increased responsibilities.

5. DISCUSSION AND CONCLUSION

The analysis of the main hypothesis reveals a robust correlation between the utilization of information technology and enhanced employee responsibility. Specifically, the greater the employment of information technology, the greater the level of employee responsibility. Thus, considering the significant role and significance of information technology, as well as the rapid progress and development of technology that has impacted all organizational areas, it is crucial to utilize it in a manner that fosters the institutionalization of skills, creativity, changes in job nature, and maximizes employee flexibility within the organization. Using information technology in an organization can reduce human errors in the company's information processing network, accelerate the delivery of services to customers, and enhance customer satisfaction. Ultimately, the integration of IT can lead to a decrease in human errors in the organization's information processing network. Additionally, IT can increase employees' knowledge and skills, facilitating the establishment of easier, more precise, and cost-effective relationships. In today's business world, organizations utilize computer technology to automate some of the tasks which were previously the responsibility of line managers. As a consequence, traditional management structures are no longer necessary for transmitting orders and messages to other units and individuals within the organization. This has made information more readily available to employees, resulting in a higher level of knowledge and awareness, and ultimately enabling employees to complete their work more efficiently.

The employment of information technology in universities results in more responsible employees. Based on the findings of this study, the implementation of information technology within the Islamic Azad University has resulted in increased accountability among staff regarding decision-making processes in the organization. This can be attributed to improved access to information necessary for making informed decisions, as well as enhanced monitoring and control capabilities allowing for more efficient management of organizational processes. Additionally, the current conditions can be analyzed more easily, contributing to the remarkable and noteworthy impacts of IT. In order to avoid mundane and repetitive tasks, decrease response time and facilitate decision-making, managers may employ information technology, delegate authority to lower levels of the organization, and embrace entrepreneurship and role design. Traditional management structures are becoming obsolete for the transmission of orders and messages within organizational units. One result of this trend is that employees have improved access to precise information. Additionally, information technology has had a noticeable impact on employee workflow, considerably shortening the time required to complete tasks, which can facilitate overall performance. Additionally, the job description significantly affects job satisfaction, as well as creating increased employment prospects, job performance outcomes and the individual's position both within the organization and society.

Based on the aforementioned points, it can be inferred that incorporating IT would enhance the sense of accountability among university staff. Autonomy, which refers to the requirement of individuals to utilize IT in influencing their responsibilities and regulating job prospects, freedom of action and expression, and the right to vote in connection with their employment, is fortified by the utilization of IT, thereby supporting organizational

monitoring and control. As the scope of this supervision widens, the quantity of line managers decreases resulting in fewer managerial tiers in these units. As a consequence, it can be inferred that utilization of IT would increase the responsibility of Islamic Azad University employees. Given the aforementioned, all secondary hypotheses would be verified, leading to confirmation of the primary hypothesis. Therefore, based on the findings, this study supports the argument that the implementation of information technology at Islamic Azad University of Zahedan has increased employee accountability.

Declaration

We acknowledge that we used ChatGPT to enhance the academic writing of our manuscript while ensuring the originality and integrity of our work.

Transparency Statement

The data supporting this study are available upon reasonable request to the corresponding author, subject to ethical and confidentiality considerations.

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Declaration of Interest

The authors declare that they have no competing interests.

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REFERENCES

- [1] Lak, B. (2007). The role of communication and information technologies in the implementation of knowledge management for the police [Conference session]. 2nd conference on the police and communication and information technology, Police University.
- [2] Davies, D. M. (1985). Appropriate information technology. *International Library Review*, 17(3), 247-258. [https://doi.org/10.1016/S0020-7837\(85\)80003-0](https://doi.org/10.1016/S0020-7837(85)80003-0)
- [3] Ryu, K., Park, J., & Park, J. (2018). The influence of IT investment and IT governance on corporate performance of multibusiness firms. *Information Systems Frontiers*, 20(4), 687-698. <https://doi.org/10.1007/s10796-017-9740-1>
- [4] Dolati, S., & Babayi, M. (2013). Futurology in skill training and employment and its role in a resilient economy. *Vocational Education and Training Organization*, 3, 149-158.
- [5] Ardalan, A. (2011). The effects of information technology on employees' empowerment [Master's thesis]. Islamic Azad University, Sanandaj Branch.
- [6] Ahmadi, M., Yunesi, S., & Dadashi, S. (2012). The effect of information technology education on employee productivity (case study: Islamic Azad University, Sari branch). *Quarterly Journal of Communication and Information Technology in Educational Sciences*, 2(3), 129-149.
- [7] Heeks, R. (2018). *Information and communication technology for development (ICT4D)*. Routledge. <https://doi.org/10.4324/9781315652603>

- [8] Warschauer, M. (2004). *Technology and social inclusion: Rethinking the digital divide*. MIT Press. <https://doi.org/10.7551/mitpress/6699.001.0001>
- [9] Bloom, N., Garicano, L., Sadun, R., & Van Reenen, J. (2014). The distinct effects of information technology and communication technology on firm organization. *Management Science*, 60(12), 2859-2885. <https://doi.org/10.1287/mnsc.2014.2013>
- [10] Heeks, R. (2010). Do information and communication technologies (ICTs) contribute to development. *Journal of International Development*, 22(5), 625-640. <https://doi.org/10.1002/jid.1716>
- [11] Prey, J. E., Woollen, J., Wilcox, L., Sackeim, A. D., Hripcsak, G., Bakken, S., Restaino, S., Feiner, S. K., & Vawdrey, D. (2014). Patient engagement in the inpatient setting: A systematic review. *Journal of the American Medical Informatics Association*, 21(4), 742-750. <https://doi.org/10.1136/amiajnl-2013-002141>
- [12] Deng, X., Joshi, K. D., & Galliers, R. (2016). The duality of empowerment and marginalization in microtask crowdsourcing: Giving voice to the less powerful through value sensitive design. *MIS Quarterly*, 40(2), 279-302. <https://doi.org/10.25300/MISQ/2016/40.2.01>
- [13] Evangelista, R., Guerrieri, P., & Meliciani, V. (2014). The economic impact of digital technologies in Europe. *Economics of Innovation and New Technology*, 23(8), 802-824. <https://doi.org/10.1080/10438599.2014.918438>
- [14] Leong, C., Pan, S., Ractham, P., & Kaewkitipong, L. (2015). ICT-enabled community empowerment in crisis response: Social media in Thailand flooding 2011. *Journal of the Association for Information Systems*, 16(1), Article 1. <https://doi.org/10.17705/1jais.00390>
- [15] Schlachter, S., McDowall, A., Cropley, M., & Inceoglu, I. (2018). Voluntary work-related technology use during non-work time: A narrative synthesis of empirical research and research agenda. *International Journal of Management Reviews*, 20(4), 825-846. <https://doi.org/10.1111/ijmr.12165>
- [16] Vlachokyriakos, V., Crivellaro, C., Le Dantec, C. A., Gordon, E., Wright, P., & Olivier, P. (2016). Digital civics: Citizen empowerment with and through technology. *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, 1096-1099. <https://doi.org/10.1145/2851581.2886436>
- [17] Fitzpatrick, P. J. (2023). Improving health literacy using the power of digital communications to achieve better health outcomes for patients and practitioners. *Frontiers in Digital Health*, 5, Article 1264780. <https://doi.org/10.3389/fgth.2023.1264780>
- [18] Ye, L., & Yang, H. (2020). From digital divide to social inclusion: A tale of mobile platform empowerment in rural areas. *Sustainability*, 12(6), Article 2424. <https://doi.org/10.3390/su12062424>