

# The influence of information technology capability in sustainable competitive advantage of commercial banks in Nepal: organizational culture as mediating variable

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## *Abstract*

*The research aims to explore the impact of organizational information technology (IT) capability in measuring sustainable competitive advantage (SCA) in commercial banking industry in Nepal. The paper, based on the Resource-Based View (RBV) and the Model of Organizational Culture suggested by Schein, puts forward a set of hypotheses regarding a theoretical framework, in which IT capability (IT infrastructure and IT competence) reinforces SCA directly and indirectly via organizational culture as a mediational force. Descriptive research design has been used along with casual comparative research design. The data is collected using a questionnaire which is a seven-point Likert scale based questionnaire sent to survey 260 middle and senior managers of Nepal commercial banks. The results of the research indicate that IT knowledge significantly impacts the business culture and long-term competitive advantage and part of the relationship between IT capability and SCA is mediated by organizational culture, which is a key factor in maximizing IT investments. The research adds value to the literature, as it informs the business and IT alignment in an emerging economy as well as gives recommendations to the banking executives and policymakers, to develop regulatory frameworks that are conducive in stimulating IT-driven innovation within the banking industry to improve IT strategies towards long-term competitive advantage.*

**Keywords:** IT infrastructure, IT competence, organizational culture, sustainable competitive advantage, Nepalese banking sector

## **Introduction**

Information technology has been ruling the world for more than few decades and has created its prominent place in every aspect (Roser, 2023 Shrestha, 2021a). For organization looking to maintain their sustainable competitive advantage, in the ever-evolving commercial world of today, information technology (IT) and business strategy must be in accordance (Henry et al., 2024). Businesses, now, have more opportunities to innovate and add value due to digitalization (Zhaozhi et al., 2023). IT not only makes

corporate operations more efficient, but it also alters how a competitive edge is gained in the marketplace (Bazrkar, 2020). The purpose of information technologies in many areas of society is to ensure that all information is provided in the correct sequence and that it is stored, exchanged, and processed (Abidovna, 2024). For the organizations that are seeking for sustained competitive advantage, Information Technology (IT) is crucial factor to address in modern dynamic business environment (Henry et al., 2024; Shrestha, 2021b; Shrestha, 2022). Organizations can use information technology (IT) capability to improve their environmental performance in order to meet environmental rules, raise their profitability, and strengthen their competitive position in the market (Darius et al., 2020; Shrestha & Thapa, 2024). IT resources of a firm is connected with the IT Capabilities (ITC) which can be further used for exchanging capabilities and services with the view to support business operation activities and gain advantage in competition (Vanessa & Molla, 2012). ITC consists of tangible assets, human talents, and a combination of both that increase the firm's value (Akram et al., 2018). Information technology capabilities dimensions is defined as IT infrastructure, IT Competence and IT Relationship Resources with the view to study their role in firms' performance (Jiatong & Taesoo, 2021; Darius et al., 2020; Akram et al., 2018; Hefu et al., 2013). By fostering more collaborations and cutting expenses, the introduction and extensive usage of IT, especially communication networks and the internet has brought quick, secure, and practical way to acquire, share, and store information (Mohamed et al., 2006). By allowing businesses to enter new markets, differentiate their offerings, streamline operations, and react quickly to shifting consumer demands and market conditions, technology can be a powerful source of competitive advantage when it comes to IT and business strategy alignment (Biu et al., 2024). However, organization culture plays crucial role in technology adoption (Bozkus, 2023) and has been pointed out as a way for implementing sustainability (Bisbey et al., 2021). The culture should align with effective strategic human resource management practices (Shrestha & Prajapati, 2023; 2024).

This study investigates the relationship of two independent variables that are, IT infrastructure, and IT competency with dependable variable, Sustainable competitive advantage mediated by organizational culture. No previous study has comprehensively studied the direct and indirect relationship between IT capabilities of the banking organization and its sustainable competitive advantage mediated through organizational culture in commercial banks of Nepal (Akram et al., 2018; Shrestha, 2018). Thus, this study might remain as the milestone in the concerned issue of research in the Nepalese commercial banking sector.

## **Literature Review**

### **IT Capabilities**

The concept of IT capability was initially suggested by Bharadwaj (2000) and Ross et al. (1996). Their definition of IT capacity was the management of effectively using

and implementing IT resources relative to other sources and capabilities (Surujlal & Kekwaletswe, 2021). IT capabilities refer to the capability of an organization to leverage automated tools to organize all functions, processes, and services of the organization which is aimed at promptly detecting and responding to the actions of the market in a harmonious way (Osita and Uzoma, 2021). IT capabilities refer to the capability to regulate the digital information network of a company, in order to create, operate, and conduct inter-firm transactions (Rai and Tang, 2014). IT capabilities refer to the capacity of a company to operate its digital information network in order to develop, handle, and execute inter-firm transactions (Muazu & Abdulmalik, 2021). Other skills are the ability to handle the IT-related cost, deliver systems on demand, and leverage IT implementation to influence certain goals. Since they are capable of supplying organizational managers with current and reliable information in quick-time decisions, firms that possess greater IT capabilities have an advantage over their competitors. Garrison et al. (2015) singled out IT capabilities, including IT infrastructure and IT competence, and IT human skills.

### **IT Infrastructure**

Information technology infrastructure includes the collection of networks, data storage, hardware, software, and other technological elements are significant to uplift, operate, and manage, an IT system (Qatawneh & Al, 2024; Shrestha, 2022). This covers everything, including network hardware and software, communications systems, data storage systems, virtualization software, server IT security elements, software and hardware, and other related services and technologies (Al-Omouh et al., 2020). A combination of digital tools, processes, and systems that enable information flow inside an organization, the hardware, software, and telecommunications services needed to distribute, store, and process electronic data make up IT infrastructure (He et al. 2020). Aboelmagd (2014) has identified that, IT infrastructure is essential for gaining sustainable competitive advantage. System incompatibilities or conflicting data models used by business divisions may result in limited investments in IT infrastructure, and existing technology investments based on antiquated assumptions may delay the development of process-oriented architectures for business redesign that integrate systems, data models, and communication (Earl & Khan, 1994).

### **IT Competence**

The firm's degree of specialized knowledge and proficiency in information technology and associated e-business applications is known as IT competence (Akram et al., 2018). The abilities and skills required to properly use digital technology are collectively referred to as digital competence (Haleem et al., 2022). Integrating elements of critical thinking, teamwork, and appropriate technology use is essential for meaningful engagement in the digital society (Pablos et al., 2022). IT competence, on the other hand, focuses on the technical and practical aspects of technology and specifically relates to the abilities needed to manage software, computers, programs, the internet, and additional digital

tools for information management and communication (Julio et al., 2020). Businesses have a higher possibility of adopting newer technologies which in turn helps in enhancing their tendency to execute them when human resources have a reasonable understanding of their significance to business operations (Aboelmaged, 2014). Ifinedo (2011) states that in addition to tangible technological assets, human resources' intangible technical knowledge provides the expertise required to successfully create and apply new technology applications. In order to successfully integrate information technology with a company, it is necessary to incorporate the organization's knowledge, procedures, and objectives into IT competency in addition to person knowledge (Tippins & Sohi, 2003).

### **Sustainable Competitive Advantage**

The definition of competitive advantage places the company that has higher profitability than the average profitability of all businesses within its industry at an advantage relative to its competitors (Sigalas, 2015). Sustained competitive advantage is the capacity of a business to keep outperforming its rivals over a relatively extended duration in time (Henry et al., 2024). It is the uniqueness of a company that provides the foundation of its long-term competitive advantage, and the ability to create said advantage is the key to the success on the market (Hossain et al., 2022).

Competitiveness of an organization has been identified as the major contributor to its success in the market (Mnjala, 2014). Resource based view of organizations has also been known to state that competitive advantage is based on the use and deploying the rare, unique, valuable, and inimitable resources and capabilities (Makadok and Richard, 2001). Innovation, efficiency, and distinction can be technologically brought into the organizations when IT and business strategy are appropriately aligned (Henry et al., 2024). Barham et al. (2020) found that strong competencies are the products of the innovation and management plays a significant role in improving the processes, both internal and external of the organization, through innovation. According to Bharadwaj (2000), the fact that information technology facilities are usually a complex and hard to comprehend and imitate collection of components meant that the given argument ignored the problem of value.

### **Organizational Culture**

Organizational culture can be series in term of norms, value, basic assumptions, beliefs and rules that group members have created to deal with adaptation and integration challenges that affect employees' behavior within the firm (Simranjeet et al., 2023). In general, organizational culture has to do with how members of the organization (both individuals and groups) perceive the organization and interact with it on a regular basis (Azeem et al., 2021). Organizational culture is a long-lasting habit that is employed and applied in daily work activities as one of the motivators for raising the standards of work produced by employees (Iskamto, 2023). This interaction has an impact on how

the organization behaves and how well its members perform, which in turn influences how well the organization performs (Iqbal et al., 2020). The nine parts of organizational culture dimensions are structure, personal accountability, warmth, support, reward and punishment, conflict and tolerance, performance standards and expectations, organizational identity and group loyalty, and risk (Tippins & Sohi, 2003). A company's culture may influence both minor and major strategic decisions on hiring, training, performance reviews, engagement, and compensation (Harrison & Bazy, 2017). Accepting change as a result of both internal and external factors is a component of corporate culture and the organization that is well-integrated may be less flexible and hesitant to alter its surroundings (Al-Swidi et al., 2021). An adaptive organization, on the other hand, is more likely to respond to and implement the needs of the organizational environment (Wahyuningsih et al., 2019).

## **Review of Empirical studies**

### **IT infrastructure and organization culture**

Hardware, software, networks, and data storage are all components of an organization's IT capabilities that are included in its information technology infrastructure (Akram et al., 2018). Similarly, cultural elements comprises of masculinity–femininity, power distance, uncertainty avoidance, and individualism–collectivism (Hofstede, 1980). There is general agreement in the literature regarding the contribution of IT infrastructure to organization culture (Iqbal et al., 2020) and, subsequently, gaining SCA (Muhammad et al., 2024). Iqbal et al.(2020) and Jabbouri et al. (2016) study found that IT infrastructure had positive and direct relation with organization culture which is our mediating variable. Organizational culture and values play a crucial role in ensuring infrastructure systems are reliable and resilient (Little, 2004). The study revealed that organizations in nations with higher uncertainty avoidance were less likely to develop IT infrastructure. There was no substantial correlation between power distance and adoption of IT infrastructures (Png et al., 2001). From these reviews following hypothesis is constructed:

H1: IT Infrastructure has a positive and significant impact on the organizational culture.

### **IT Competency and organization culture**

Culture refers to a shared mode of thinking and behaving among individuals and is a philosophy that people have developed to secure peace between individuals that cause the employees to be more productive and efficient through an increased dedication to their profession (Alsabahi et al., 2021). The literature has shown that organizational culture can shape different human behaviors within an organization including work satisfaction, sense-making, collective efficacy, self-efficacy, and commitment to an organization to a large extent (Lund, 2003; Walumbwa et al., 2005). The development of competences is based on the organizational culture that is the structure of the organization (Mcauley, 1994). The dynamics of the organization, which determines the meaning of being

competent in a particular business organization, forms the back of the whole process (Prahalad and Hamel, 2009). The culture of organization has a significant impact on the competency formation, therefore (Fleury, 2009). The findings indicated that organizational culture has a powerful and beneficial impact on the competency and performance of the employees (Basmawi and Usop, 2016). The workplace learning researches were significantly and positively connected with the advancement of workforce abilities and skill formation (Cacciattolo, 2015; Kunjiapu and Yasin, 2015; Plant and Barac, 2017). Nevertheless, the ability to study in the workplace and the competence of the personnel is compromised by the absence of regular communication (Darius et al., 2020). Plant and Barac (2017) also investigated the relationship between most modes of learning in the workplace and competence of workers and they found out that learning through written materials was loosely correlated. The results of learning at the workplace and IT competency are not conclusive and more variables are needed to mediate the relationship between the variables. In addition, other researchers have stated that organizational culture promotes learning in the workplace and consistency to high task and contextual performance (Daryoush et al., 2013). Therefore, the impact of organizational culture can either support or discourage the knowledge and organizational learning activities in a company (Lee et al., 2017). On the same note, organizational culture has also been a highly studied issue, as a moderator in various scenarios, i.e., managerial competency and performance, workplace learning and performance, leadership competencies, and job role performance and was found to have an influence on the managerial competency and learning in workplace (Daryoush et al., 2013; Hamzah et al., 2013). The study carried out by Chuttipattana and Shamsudin (2011) determined that there is a direct and positive relationship between IT human resource and organization culture.

However, no study has shown that organization culture mediates the correlation between the IT capabilities and sustainable competitive advantage. To build a broader view on the role of the organizational culture in the context of establishing IT, more research on the topic is required to close the gap and determine the mechanism through which the organizational culture mediates the relationship between the IT ability and the sustainable competitive advantage. Thus, according to the current research, the relationship between the IT capability and sustainable competitive advantage is affected by the organizational culture. According to the arguments mentioned above, it is the following hypothesis.

H2: IT competency has a positive and significant impact on the organizational culture.

### **Organization Culture and Sustainable competitive advantage**

Diabate et al., (2019) found a significant correlation between small and medium-sized firms' sustainable growth (SMESG) and various dimensions of entrepreneurial ability (EA), including innovation, risk control, connection and opportunity recognition ability, and learning capacity. Organizational culture influences employee behavior, decision-making, and organizational performance (Fernandes et al., 2023). It links employee

behaviors with strategic goals, encouraging collaboration, creativity, and adaptation (Pathirana, 2019). Strong and adaptable cultures have been associated to higher financial success and market share gains and certain forms of cultures, such as clan and adhocracy cultures, foster innovation and adaptability, giving competitive advantages in changing circumstances (Harahap et al., 2024). From these reviews following hypothesis is constructed:

H3: Organizational culture has positive and significant impact on the Sustainable competitive advantage.

### **IT Infrastructure and Sustainable competitive advantage**

"The foundation of IT capability, delivered as dependable services shared throughout the firm and coordinated centrally, usually by the information systems group" is how one defines IT infrastructure (Dehning & Stratopoulos, 2003). In a quantitative study, Akram et al. (2018) investigated the direct impact of intangible IT resources on long-term competitive advantages in Algeria's high-tech sector and found that IT infrastructure significantly influences long-term competitive advantage. Additionally, using multivariate analysis of covariance, Lim and Trimi (2014) examined the effect of IT infrastructure flexibility on the competitive advantage of small and medium-sized businesses in a survey of 62 firms. The findings demonstrated that competitive advantage is greatly and favorably impacted by having a flexible IT infrastructure. From these reviews following hypothesis is constructed:

H4: IT Infrastructure has a positive and significant impact on the Sustainable competitive advantage.

### **IT competency and Sustainable competitive advantage**

The paper by Kariuk et al., (2018) is a survey cross-sectional study, utilizing 62 firms to determine the effect of human resources information systems (HRIS) on competitive advantage of Nairobi Securities Exchange-listed firms, multiple regression analysis was carried out based on the data obtained after survey. The study conducted by Akram et al. (2018) and Ismail (2008) found that the relationship between IT competency variable and Sustainable competitive advantages is significant. Organizations in their quest to achieve sustainable competitive advantage must have valuable, non-substitutable, difficult to imitate, and uncommon resources (Barney, 1991). These resources must also be heterogeneous, imperfectly mobile and limited with ex ante and ex post competition (Peteraf, 1993). According to Bharadwaj (2000), the information technology skills and facilities have a long-lasting competitive advantage because of complex and imitable aspects. That is, the IT competency assists an organization in attaining the sustainable competitiveness. Based on these reviews the following hypothesis can be built:

H5: IT competency affects positively and significantly on the Sustainable competitive advantage.

## Organizational Culture

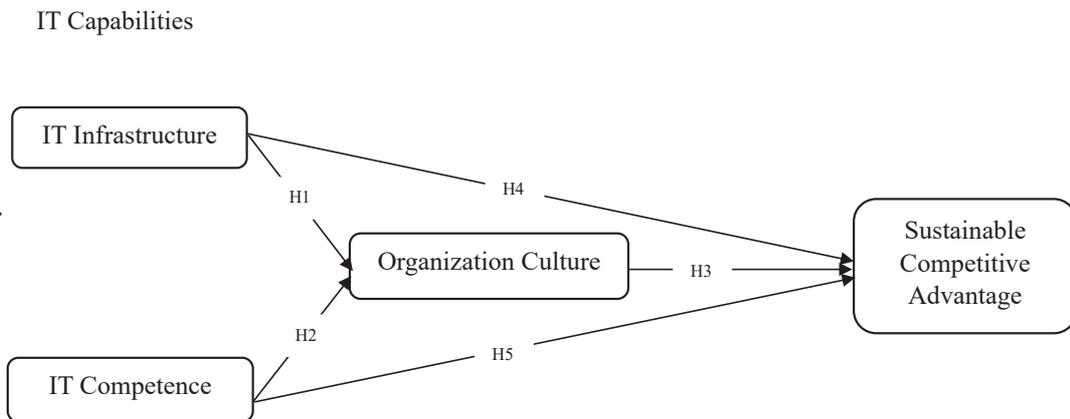
The Iqbal et al. (2020) study has established a positive and significant influence of IT infrastructure resources and IT skill in field of technical and managerial on organizational culture in the university by employees i.e IT competency. It has been conceded by management and cultural researchers that a sound organizational culture is fundamental to long term sustainable competitive advantage (Barney, 1991; Fiol, 1991; Lado et al., 1992). The organizational culture encourages clear decision making leading to increased returns on investment and earnings (Jones, 1983). IT assets supplement fundamental marketing skills in terms of speed to react to market needs, predicting competitor actions, analyzing customer data, and locating desires and needs. Based on review of the theses, the following hypotheses are built:

H6: Organization culture mediates between IT Infrastructure and Sustainable Competitive Advantage.

H7: Organization culture mediates between Sustainable Competitive Advantage and IT Competency.

## Theoretical Framework

IT capabilities are taken as an independent variable in this study. It is measured by two independent variables; IT infrastructure and IT Competence. The mediating roles of organization cultures are also considered and show the impact of IT capabilities on Sustainable competitive advantage.



(Source: Iqbal et al. (2020); Azeem et al. (2021))

## Research Methodology

Hypothetico-deductive method is advocated when the knowledge is able to provide more than a simple experimental hypothesis (Mentis, 1988). A sufficient literature is available to develop hypotheses of the study. Accordingly deductive approach has been pursued in this research. In order to articulate the linkage between IT capabilities, and sustainable competitive advantage mediated by organizational culture, descriptive research design coupled with casual comparative research design has been applied. The sample is purposively chosen as senior and middle level managers in the commercial banking sector: they are the ones engaged in the decision making process, and they need the knowledge of IT capabilities, organizational culture, and situation in the market, that is why they may be more accurate in providing the required information. Therefore, the sample was selected using purposive sampling method. According to the report issued by Nepal Rastra Bank (2018), there are 1466 managers employed in the commercial banks of Nepal. The sample size is chosen at more than seventeen percentages of the managers. Accordingly, sample consists of 260 managers of operation in various banks in Nepal. Likewise, other researchers (Adhikari and Shrestha, 2019; 2023) were engaged in the related problems and they work in the sample less than ten percentages. Thus, the sample size is adequate to analyze it further.

The mean, frequency, and percentage tools have been employed under the descriptive research, and correlation and hierarchical regression analysis have been performed under the casual comparative research. The research method employed is quantitative. The tool of data collection in this study is a questionnaire in a seven-scale likert scale. Where 1 is strongly disagree and 7 strongly agree

Questions of Akram et al. (2018); Lu and Ramamurthy, (2011); Ross et al. (1996) and Weill et al. (2002) have been borrowed to measure IT infrastructure. The studies by Akram et al. (2018) and Tippins and Sohi (2003) were used to take the questions associated with IT Competence. Tippins and Sohi (2003) have classified the IT competence into three components IT knowledge, IT operations, and IT object in order to quantify the IT competency roles in organizational performance. To measure Sustainable Competitive Advantage, questions are taken based on the literature of Azeem et al. (2021) and Wu and Chen (2011). Organization culture questionnaire has been borrowed in the research of Lee and Choi, (2014) and Azeem et al., (2021). Data has been analyzed using SmartPLS and SPSS Software. The framework relationships have been proposed through the testing of data collected on managers of commercial banking institutions within Nepal. The reliability and validity of the proposed questionnaire have been tested with the help of Structural Equation modelling with SmartPLS and the proposed relationships within the conceptual model have been predicted. In the process of carrying out the model fitness it is revealed that NFI is not above 0.80 (Ramadevi et al., 2016). In order to enhance validity and reliability of the model the following statements were dropped;

OC3, OC4, OC6, OC9, ITC6, ITC7, ITC8, ITC9, SCA1, SCA7, SCA8, SCA9, and ITI3 of the model since they have least r value in the model. Data coding in the case of IBM SPSS Statistics 30.0 is done, whereby categorical data is assigned numerical values to enable statistical analysis. Coding is followed by frequency analysis to summarize the data distribution by counting the numbers of instances of each category.

In order to test the connections between variables in the conceptual model, we used SmartPLS 4 through structural equation modeling (SEM). Since SmartPLS 4 have variance-based SEM method, which is not as sensitive to the sample size as other applications, which have covariance-based SEM methods, like AMOS, we selected it in our study. In order to test the connections in the conceptual model, we have applied structural equation modeling (SEM) through SmartPLS 4. Since SmartPLS 4 apply the variance-based SEM method, which is not highly sensitive to the sample size as compared to other applications that apply the covariance-based SEM methods, e.g., AMOS, we selected it to conduct our research (Hamid et al., 2017). Organizational culture according to this study is a second-order construct which influences sustainable competitive advantage concerning IT infrastructure and IT competence. As such, the validity and reliability of the first and second-order components was tested before assessing the proposed relationships.

## Data Analysis

**Table 1: Gender of respondent**

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	118	45.4	45.4	45.4
Male	142	54.6	54.6	100
Total	260	100	100	

This table presents the gender distribution of respondents the survey. A total of 260 individuals participated, with 118 (45.4%) identifying as female and 142 (54.6%) identifying as male. The "Valid Percent" column confirms that these percentages are calculated based on the total valid responses, while the "Cumulative Percent" column shows the progressive total, reaching 100% after including both groups. This indicates that male respondents slightly outnumber female respondents in the survey. This study can be generalized slightly more efficiently in commercial banks with more male employees than female employees.

## Initial Model

Figure 2 is the initial model of the study that contains all of the statements of the questionnaire. While performing the model fitness, it is found that NFI is less than 0.80

(Ramadevi et al., 2016). To improve the validity and reliability of the model we removed statements OC3, OC4, OC6, OC9, ITC6, ITC7, ITC8, ITC9, SCA1, SCA7, SCA8, SCA9, and ITI3 from the model because they have the least r value in the model. This resulted the model into figure 3.

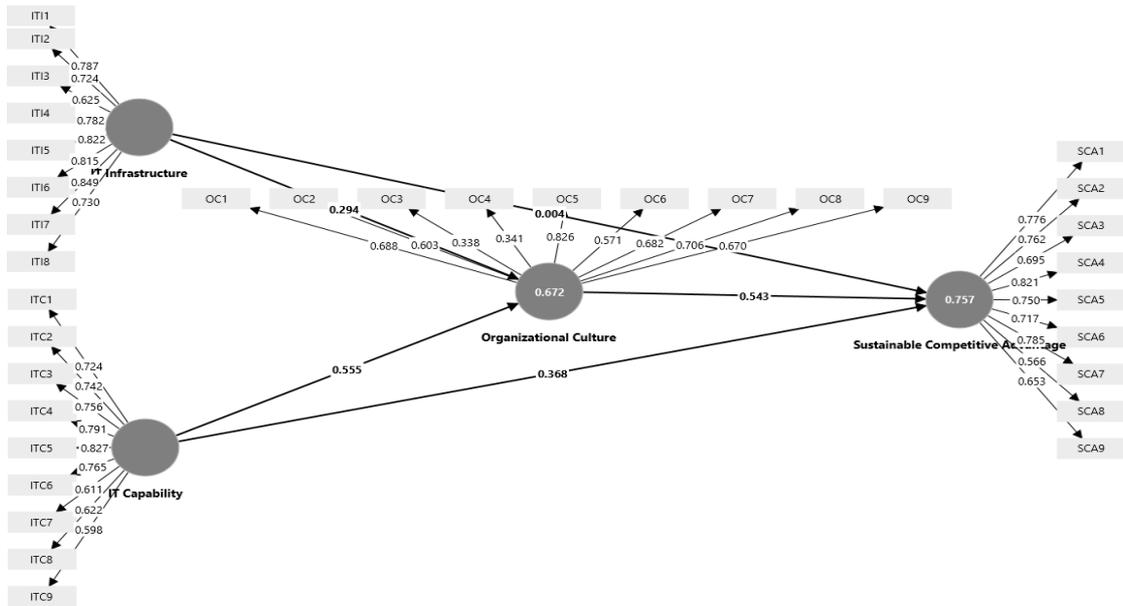
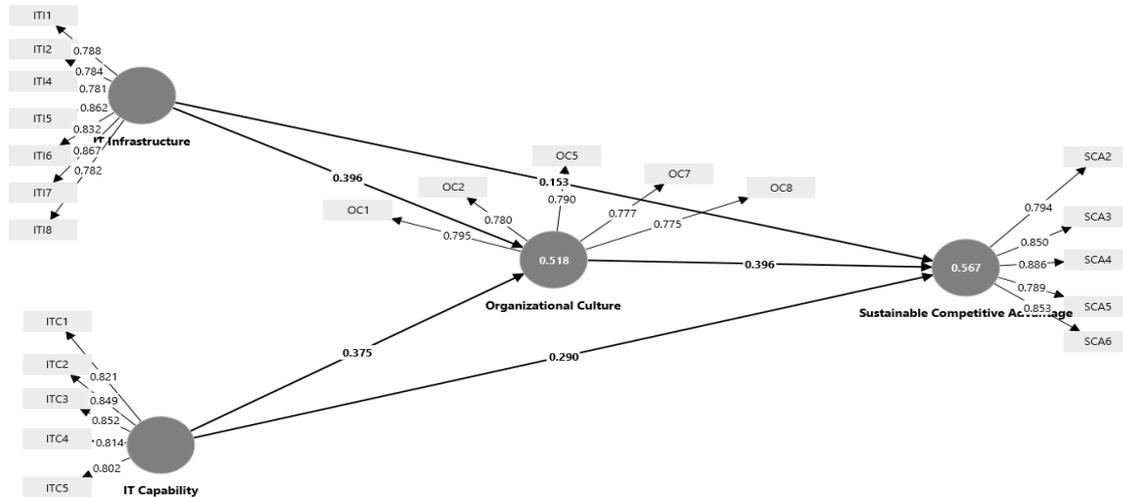


Figure: 3 Final Model



**Table 2: Testing fitness of the model**

In figure 3 from PLS-SEM 4 Algorithm resulted the outcomes represented by table 2.

	Saturated model	Estimated model
SRMR	0.068	0.068
d_ ULS	1.159	1.159
d_ G	0.52	0.52
Chi-square	767.983	767.983
NFI	0.816	0.816

Table 2 presents the model fitness test results obtained from the Partial Least Squares Structural Equation Modeling (PLS-SEM) algorithm. The SRMR value is 0.068 for both models, indicating a good model fit, as values below 0.08 suggest an acceptable level of fitness in PLS-SEM (Hu & Bentler, 1999). The NFI value is 0.816, suggesting an acceptable model fit. Generally, an NFI value above 0.80 is considered a good fit (Ramadevi et al., 2016). These findings validate the structural relationships within the model, making it a strong tool for further analysis

**Table 3: Construct Reliability and Validity Overview**

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
IT Capability	0.885	0.887	0.916	0.685
IT Infrastructure	0.915	0.916	0.932	0.663
Organizational Culture Sustainable	0.843	0.848	0.888	0.614
Competitive Advantage	0.891	0.893	0.92	0.697

Table 3 shows how reliable and valid the study's measurement model is by evaluating different constructs using Cronbach's Alpha, Composite Reliability (rho\_a and rho\_c), and Average Variance Extracted (AVE). Cronbach's Alpha values for all constructs are between 0.70 to 0.95, meaning the data is internally consistent and reliable (Tavakol & Dennick, 2011). Similarly, Composite Reliability (rho\_a and rho\_c) values are greater than value of 0.70, showing that the items used to measure each construct work well together (Wasko & Faraj, 2005). The AVE values are all above 0.5, which means that each construct captures enough information from its indicators to be considered valid

(Fornell & Larcker, 1981). Overall, these results confirm that the study’s measurement model is strong, reliable, and well-suited for further analysis.

**Table 4: Discriminant Validity-hetrotrait-monotrait Ratio(HTMT)-Matrix**

	IT Capability	IT Infrastructure	Organizational Culture	Sustainable Competitive Advantage
IT Capability				
IT Infrastructure	0.827			
Organizational Culture	0.762	0.762		
Sustainable Competitive Advantage	0.748	0.704	0.79	

Table 4 shows the values of Heterotrait-Monotrait Ratio (HTMT), which evaluates the discriminant validity of the research. Discriminant validity is used to make sure that every construct is different. In general, the values of HTMT must be less than 0.90 to ensure that there are no excessively similar constructs (Hamid et al., 2017; Shrestha et al., 2025). The average of all the HTMTs of this research is between 0.704 and 0.827 which means that organizational culture, IT Capability, IT Infrastructure, and Sustainable Competitive Advantage can be well distinguished. This proves the fact that the measurement model has been effective in representing individual features of the constructs, which would affirm the originality of the research results.

**Table 5: Discriminant Validity-Fornell-Larcker criterion**

	IT Capability	IT Infrastructure	Organizational Culture	Sustainable Competitive Advantage
IT Capability	<b>0.828</b>			
IT Infrastructure	0.747	<b>0.814</b>		
Organizational Culture	0.67	0.675	<b>0.783</b>	
Sustainable Competitive Advantage	0.67	0.637	0.694	<b>0.835</b>

Table 5 shows the Fornell Larcker Criterion that is applied to test the discriminant validity in the research. Discriminant validity is used to make sure that each construct is distinct. Based on this criterion, a construct is said to measure what it should measure when its square root of AVE (in bold along the diagonal) is larger than the correlation coefficients

of that construct with others. The diagonal values of (0.828, 0.814, 0.783, and 0.835) are larger than the values under them in table 5, this implies that each construct has a stronger relationship with its indicators than the relationship with other constructs. This affirms that the constructs, namely IT Capability, IT Infrastructure, Organizational Culture and Sustainable Competitive Advantage are not similar to another such that the model has been able to capture different concepts without overlaps.

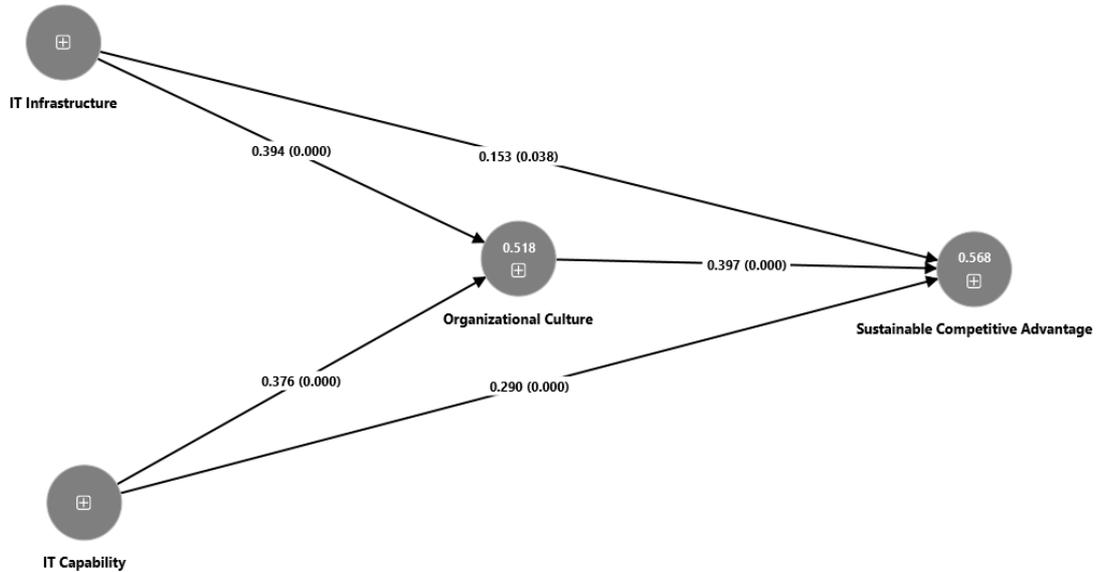
**Table: 6 Outer Loading check**

	IT Capability	IT Infrastructure	Organizational Culture	Sustainable Competitive Advantage
ITC1	0.821			
ITC2	0.849			
ITC3	0.852			
ITC4	0.814			
ITC5	0.802			
ITI1		0.788		
ITI2		0.784		
ITI4		0.781		
ITI5		0.862		
ITI6		0.832		
ITI7		0.867		
ITI8		0.782		
OC1			0.795	
OC2			0.78	
OC5			0.79	
OC7			0.777	
OC8			0.775	
SCA2				
SCA3				0.794
SCA4				0.85
SCA5				0.886
SCA6				0.789
				0.853

Table 6 shows the Results of the Outer Loadings which shows the extent to which each survey item (indicator) measures its constructs. Outer loadings are used to measure how strongly a given item correlates with the construct, and a value of greater than 0.7 is reasonable (Fornell and Larcker, 1981). In the present study, the values of all the outer loadings are 0.775-0.886, which implies that the items are significant contributors to their corresponding constructs. The findings substantiate that the constructs were

well-represented by their indicators; they include IT Capability, IT Infrastructure, Organizational Culture, and Sustainable Competitive Advantage. This implies that the measurement model is sound since every item is capable of capturing the concept of which it is supposed to be capturing.

**Figure:4 Direct impact, Path Coefficient and P value**



The relationships are indicated in the arrows in figure 4 where numbers are used to denote the strength and significance of each relationship. Organizational Culture (0.394) is more influenced by IT Infrastructure than it is by Sustainable Competitive Advantage (0.153). Likewise, IT Capability has another effect on Organizational Culture (0.376) and Sustainable Competitive Advantage (0.290). Lastly, the effect of the Organizational Culture on Sustainable Competitive Advantage is positive (0.397). The figures within the parenthesis (0.000, 0.038) reflect the p-values, which show that the majority of such relationships are statistically significant, which implies that they are not likely to have emerged due to chance. All in all, the diagram implies that a positive organizational culture, well-developed IT infrastructure, and capabilities are essential in attaining sustainable competitive advantage.

**Table 7: Path Coefficient-mean, STDEV, T Values, P values**

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
IT Capability -> Organizational Culture	0.376	0.375	0.078	4.831	0
IT Capability -> Sustainable Competitive Advantage	0.29	0.285	0.076	3.791	0
IT Infrastructure -> Organizational Culture	0.394	0.396	0.081	4.879	0
IT Infrastructure -> Sustainable Competitive Advantage	0.153	0.157	0.074	2.078	0.038
Organizational Culture -> Sustainable Competitive Advantage	0.397	0.398	0.068	5.837	0

The table 7 presents the path coefficients along with their mean, standard deviation (STDEV), T-values, and P-values, which help assess the strength and significance of relationships between variables in the study. A higher path coefficient (O value) indicates a stronger relationship between the constructs. The T-values above 1.96 and P-values below 0.05 suggest statistically significant relationships (Zhang, 2022). The results show that IT Capability and IT Infrastructure both have a significant positive impact on Organizational Culture, with path coefficients of 0.376 and 0.394, respectively. Similarly, IT Capability (0.29), IT Infrastructure (0.153), and Organizational Culture (0.397) all significantly contribute to Sustainable Competitive Advantage. Among these, Organizational Culture has the strongest influence on Sustainable Competitive Advantage, as indicated by its highest T-value (5.837). These findings confirm that improving IT resources and a strong organizational culture can enhance a firm's competitive advantage. It is analyzed that all the p-values are less than 0.05, since all the above-mentioned hypothesis are accepted. It is found that organizational culture mediates the relationship between independent variables IT infrastructure and IT competence and dependent variable sustainable competitive advantages.

**Table 8: Specific Indirect Effect mean, STDEV, p-value**

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
IT Capability -> Organizational Culture -> Sustainable Competitive Advantage	0.149	0.15	0.045	3.337	0.001
IT Infrastructure -> Organizational Culture -> Sustainable Competitive Advantage	0.157	0.156	0.038	4.145	0

Table 8 presents the specific indirect effects, which show how IT Capability and IT Infrastructure influence Sustainable Competitive Advantage through Organizational Culture. The path coefficients (O values) for these indirect effects are 0.149 and 0.157, indicating that both IT Capability and IT Infrastructure contribute to Sustainable Competitive Advantage indirectly by shaping Organizational Culture. The T-values (3.337 and 4.145) are above 1.96, and the P-values (0.001 and 0.000) confirm that these indirect effects are statistically significant. This means that a strong organizational culture plays a key role in linking IT capabilities and bank try to gain long term competitive advantages.

**Table: 9 Total effect-mean, STDEV, T Values, P values**

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values
IT Capability -> Organizational Culture	0.376	0.375	0.078	4.831	0
IT Capability -> Sustainable Competitive Advantage	0.439	0.435	0.077	5.729	0
IT Infrastructure -> Organizational Culture	0.394	0.396	0.081	4.879	0
IT Infrastructure -> Sustainable Competitive Advantage	0.31	0.313	0.077	4.007	0
Organizational Culture -> Sustainable Competitive Advantage	0.397	0.398	0.068	5.837	0

Table 9 shows the correlation between various variables including IT Capability, IT Infrastructure, Organizational Culture and Sustainable Competitive Advantage and their statistical significance. With each and every relationship, the Original sample (O) represents the estimated effect, the Sample means (M) represents the mean of the effect over several samples, and the Standard deviation (STDEV) is the variation in the data. The value of T statistics (|human|>The T statistics (|human|) is the measure of the strength of the effect in comparison to the variability and the P values are the measure of the statistical significance of a particular relation. All the P values are equal to 0 which implies that all the relationships are significant. As an illustration, both Organizational Culture (0.376) and Sustainable Competitive Advantage (0.439) are strongly positively affected by IT Capability (0.376), and Organizational Culture is, in turn, positively affecting Sustainable Competitive Advantage (0.397). All correlations are quite important as they have T statistics and P values.

**Table 10: Collinearity Statistics VIF**

	VIF
ITC1	2.357
ITC2	2.684
ITC3	2.408
ITC4	1.96
ITC5	1.87
ITI1	2.392
ITI2	2.458
ITI4	2.068
ITI5	2.862
ITI6	2.519
ITI7	3.153
ITI8	2.188
OC1	2.755
OC2	2.649
OC5	1.662
OC7	2.472
OC8	2.402
SCA2	1.966
SCA3	2.79
SCA4	2.866
SCA5	1.904
SCA6	2.681

Table 10 shows the Variance Inflation Factor (VIF) values for all variables in the study. VIF helps measure how much the variance of a regression coefficient is inflated due to multicollinearity, meaning when independent variables are correlated with each other. In this case, all the VIF values are below 10, which indicate that multicollinearity is not a significant concern for these variables. Most of the VIF values range from 1.66 to 3.15, (Hair et al., 2012) suggesting that the variables in the study do not have strong multicollinearity, meaning they can be safely included in the regression model without causing issues with the analysis.

### **Discussion**

It has been determined in this research that IT capability in reference to IT infrastructure and IT competence, positively and significantly affect sustainable competitive advantage (SCA) amongst Nepalese commercial banks. Also, the mediating effect of the organizational culture also boosts the relationship between IT capability and SCA.

The results suggest that the competitive positioning of the banks with a successful IT infrastructure and human resource can be improved, but the impact is conditional when the presence of an organizational culture that has been developed properly. Our results are supported by a number of studies. Listed companies have important contributions of HRIS to competitive advantage (Kariuk et al. 2018; Akram et al., 2018; Iqbal et al., 2020). Similarly, Lim and Trimi (2014) highlighted the importance of the IT infrastructure flexibility in enhancing competitiveness, particularly to the small and medium enterprises. Moreover, Lee et al. (2017) found out culture dictates the efficacy of IT-related improvements which supports our conclusion of culture strengthening the correlation between IT and SCA. Conversely, there are other studies that give mixed findings. Little has proposed (2004) that although IT and culture have an effect on performance; the effect varies depending on the industry. Aboelmaged (2014) concentrated on manufacturing companies and discovered that, without appropriate organization alignment, technological preparedness is not sufficient enough to achieve success. These results suggest that IT capabilities in isolation might not be effective unless it is supported by good cultural and strategic factors.

Our findings are mostly similar to other studies published before supporting the aspect of IT capability in the maintenance of the competitive advantage. Nevertheless, there exist various differences depending on industry setting and location. Research carried out on the developed markets (Little, 2004; Aboelmaged, 2014) has indicated that the effects of IT may differ based on the environmental and organizational preparedness. Conversely, the literature devoted to the emerging economies, including ours, has shown that IT capability has a direct and a powerful impact, especially in a case of strong organizational culture.

The parallels of our research and the studies conducted before can be explained by the universal significance of IT capability in the business success. IT infrastructure and competence improve efficiency and innovation in various industries and regions. The differences however, might be because of the economic development, industry type, and also cultural differences. As an example, Nepal banks work in the new economy where the use of IT is still developing and its influence on competitiveness is more impactful. Conversely, developed economies have hit the saturation point where further investment in IT generates less returns without incorporation of other strategic factors.

## **Conclusion**

Since the research established that IT capabilities, in particular IT infrastructure and IT competence, played a critical role in the sustainable competitive advantage (SCA), IT managers need to come up with strategic programs that can build up IT capabilities by keeping investing in technology, training and workforce development. As organizations keep up with digital transformation it is necessary to ensure that the IT investments are related to the strategic goals of the firm so that the performance is optimized over

the long term. The fast introduction of IT into the banking system has transformed the organizational formulations, providing novel fields of efficiency and innovation. Since there is growing intensity in the financial market, banks would need to improve their IT capacity in order to retain their market share. Enhancing IT infrastructure and digital capabilities can help companies to provide new services, enhance customer satisfaction, and maintain competitiveness. Banking organizations must be keen on building a robust organizational culture that facilitates the digital transformation. Managers should promote knowledge-based culture where employees are provided with explicit and tacit knowledge to optimize IT investments. The promotion of cooperative learning and online knowledge-sharing culture will make organizations more flexible and adjustable to the market.

Lastly, the policymakers must take into consideration development of enabling regulatory policies that enhance IT-based innovation within the banking industry. Regulatory bodies can contribute to high efficiency and competitiveness of commercial banks by motivating them to digitalize and provide a secure IT infrastructure. The strategies in future should be to integrate IT development with cultural and managerial changes to continue to grow and perform in the long term.

### **Implications**

The results of the current research can provide significant recommendations to the bank managers, future researchers, and policymakers of the banking industry. In the case of managers, this study can assist in managerial decision-making. This implies that it does not suffice to invest in technology. They should also be concerned with creating an environment conducive to new technologies where employees are willing to embrace new technologies, share knowledge, and work in teams. In order to achieve the maximum of their IT investments, managers are advised to provide regular staff training promote innovation and ensure that IT objectives are aligned with the long-term strategy of the organization.

In terms of policy making, the findings indicate that the policy in the banking sector should drive digitalization through establishment of favourable policies and regulation. These must promote the use of technology, guarantee data security, and aid in the growth of workforce. The policies which are inclusive of training programs, digital literacy, and incentives towards IT innovation can make the businesses, particularly developing economies, keep abreast with the rapid changing environment.

Though various samples have been chosen in Nepalese commercial banks in this study, there is likelihood that the sample might not be representative of all other organizations in different sectors. The study concentrated mostly on those banks that have already incorporated IT capabilities in their operations. Thus, the results might not be similar to the organizations which are at the initial stages of IT adoption or not introduced to the digital transformation strategies. Also, IT capabilities might have a different effect on

sustainable competitive advantage based on the level of IT integration in an organization. Subsequent studies can investigate these variations using comparison of firms at the various stages of IT utilization.

The other shortcoming of this research is that it concentrates on IT infrastructure and IT competence as important dimensions of IT capability. Although these are very significant factors, there are other variables, like the IT human resources, digital leadership and IT governance, which may contribute to better understanding of IT-driven competitive advantage. These other considerations can be included in future research to come up with a more comprehensive framework of the role of IT in the overall performance of the firm. In addition, this paper is confined to commercial banking industry in Nepal. Although financial institutions are highly dependent on the IT capabilities, such results may not be a direct application of the findings to other industries. The future research can be expanded on the current study to other industries, including manufacturing, colleges, or governmental agencies to find out whether IT capabilities have different impacts on competitive advantage across industries. Lastly, organizational culture was an initial factor that was mostly taken into account in the study. The study may be extended in future by examining other moderators, including digital transformation strategies, organizational agility, and employee digital competency, to gain a more detailed insight into the relationship between sustainable competitive advantage and IT capability. The broadening of the variables and industries will contribute to perfecting theoretical and practical implication of IT-driven competitive advantage.

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