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Abstract: Globally, banking industry is saddled with intense competition. Management of banking firms are required to formulate effective strategies to drive their capabilities to compete, discover and defend their positions in a competitive industry. İn Ghana, universal banks are leveraging the capabilities of information technology to devise technology-driven offensive strategies. The core of these strategies is embarking on innovative activities to enhance performance and respond to business challenges. A qualitative analysis was performed using primary data from 17 participants. Using NVivo, consequential effects of IS-technological innovation (ISTI) on business challenges, innovation performance, operational performance; and specific moderating factors of ISTI were assessed. Strategic-IS Project impacts strong ($r = 0.634601$) and positive on ISTI than the other moderators. ISTI impacts strongly ($r = 0.644951$) and positively on operational performance. With $r = 0.7422$, innovation performance positively and strongly influences operational performance. ISTI impacts positively on business challenges.

Keywords: bank; business challenges; Ghana; information systems; moderating factors; offensive strategy; qualitative analysis; technological innovation.

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1 Introduction

The financial sector in Ghana is saturated with 23 licensed universal banks. Each of these universal banks is a single financial corporate entity that integrates commercial and investment banking activities to provide a number of financial services. Moreover, 44 rural and community banks, 168 microfinance institutions, 42 non-banking financial organisations (BoG, 2019), and telecommunication firms offer financial services. Competition in this sector is intense, market environment is volatile, and operations are adversely affected. It is key for management to fully utilise and leverage the capabilities of resources including information technology (IT) to identify sources of sustainability, support business operations and strategy formulation, and create new strategic opportunities (Chen and Tsou, 2007) such as offering distinctive products and/or services. This move could lead to streamlining operational systems, providing better and improved services to customers, attracting new customers, and improving firm performance. The intensity of competition among universal banks in Ghana demands these banking institutions to formulate effective strategies to address the effects of the competitive forces.

Management of universal banks in Ghana are discretionary devising technology-based offensive strategies that utilise the capabilities of IT to embark on technological innovation initiatives (Obeng and Mkhize, 2017) to support business operations, offer differentiated service, improve customer service, improve performance, and withstand market threats. In recent times, researchers and practitioners in banking firms concentrate much effort on innovation as it is recognised a strong predictor and determinant of performance (Hilal, 2015). According to Bharadwaj et al. (2013), information systems facilitate technological innovation efforts, hence, achieving strong alignment between IS and business improves results greatly (Chen et al., 2010; Coltman et al., 2015). Using IS, business and IS/IT managers should be able to collaborate to share knowledge that results in improved organisational learning, functional innovative operations and agility to contain business challenges.

The perceived influence of individual moderating factors on ISTI and the effects of leading technology-driven offensive strategy are crucial organisational issues. However, these important organisational perspectives remain largely unexplored especially in the Ghanaian banking sector. The study therefore seeks to assess the consequential effects of leading technology-driven offensive strategy among eight universal banks in Ghana. Proceeding sections of this research include literature review, research methods, results of data analysis, discussion and concluding remarks.

2   Literature review

2.1   *Ghanaian banking industry*

There are 23 universal banks, 42 non-banking financial institutions, 144 community and rural banks, and 168 microfinance institutions licensed to operate in Ghana (BoG, 2019). While competition among the banks is intense, the landscape of the banking industry is developing with modern trends of technologies, best practices, and improved regulations (compliance with Basel I, II, III). These banks are formulating and implementing technology-driven strategies to improve and sustain banking operations, differentiate service offering and improve customer service (Asante et al., 2011).

2.2   *Leading technology-driven offensive strategy in banking firm*

Strategy as an array of decision making, shapes internal policies and procedures of an organisation and guides its effort to align with its environment (Hambrick, 1983). Strategy is "the match an organization makes between its internal resources and skills… and the opportunities and risks created by its external environment" [Grant, (1991), p.114]. Strategy is usually a means to address any change following a defined direction (Henderson, 1989). Hence, strategies need to evolve to adapt to the dynamic organisational environment (Tang and Walters, 2010). Strategy is usually a means to address any change following a defined direction (Henderson, 1989). Strategy is usually a means to address any change following a defined direction (Henderson, 1989). Hence, a strategy should evolve to address constant changes that occur in a business environment (Tang and Walters, 2010). Banking institutions are required to formulate appropriate strategies to assess market forces to discover and defend its position.

Intense competition is a major business challenge. Banking firms formulate technology-driven strategies such as technological innovation to respond offensively to these challenges (Rivard et al., 2006). Utilising the capabilities of IT is key to successful implementation of innovation-based offensive strategy. According to Chen et al. (2010), successful innovation initiatives depend on inimitable resources that are identified through IS strategy of an organisation. Banks are using information systems to facilitate knowledge acquisition and sharing activities that are deemed major contributors of successful technological innovation activities (Peppard and Ward, 2004). Moreover, banks are using information systems to enhance delivery of customer service, develop new or improve products and services, and compete globally (Aliyu et al., 2012).

Technological innovation is a long-term business strategy (Su and Tang, 2016) and significant source of sustainability (Eidizadeh et al., 2017) that thrives on the capabilities of information systems (Bassellier and Benbasat, 2004). The product and process innovations are considered as technological innovation (OECD, 2005; Damanpour, 2010). Product innovation offers significantly improved or new characteristics of service to customers (OECD, 2005). Process innovation on the other hand is the adoption of a new/significantly improved technique for service delivery or production (OECD, 2005). Through IS-technological innovation (ISTI), new/ significantly improved IT-enabled product or process is developed. Consequently, product quality is improved, self-service is enhanced, and banking operations are improved. Examples of IT-enabled products and/or services in the Ghanaian banking industry include eAlerts, electronic data interchange, automated teller machines, mobile and internet banking, cash management,

personal computer banking, telephone banking, electronic funds transfer, electronic wallets, electronic platform, and eAlerts.

2.3   *Factors that moderate the activities of ISTI*

Egbetokun et al. (2010) indicate that, organisational learning, agility, collaboration, strategic IS projects, and management commitment are factors that could impact the efforts of devising innovation-based offensive strategy.

One of the tools that organisations use to achieve competitive edge is organisational learning (Liao et al., 2010). Information systems offer new tools to learning organisations to integrate processes that produce information, create knowledge and new inimitable capabilities to improve innovation activities (Lundvall and Nielsen, 2007). Organisational learning competency emanates from collaboration among functional areas and knowledge application (Chae et al., 2014). This makes it possible for organisations to sense events and trends occurring in their environments on time and respond appropriately (Lavie, 2012).

Management commitment is a key to successful implementation of ISTI (Gartlan and Shanks, 2007). Strategically, management use information systems to comprehend customers' needs, improve teamwork and manage knowledge assets effectually (Lioukas et al., 2016) whiles embarking on innovation-based offensive strategy.

Organisational goals and objectives are achieved during strategy implementation, especially, if there exist effective *collaboration* between all functional areas to provide input into the strategy formulation (Reed and Buckley, 1988). The driving force of technological innovation is co-creating value through global collaboration, knowledge sourcing, and obtaining inputs from customers and employees (OECD, 2009). Through this driving force, competency that facilitates innovation is expressed (Chae et al., 2014).

Banks respond flexibly and timely to market dynamics since they have no other option than to understand the dominant business challenges that demand agile response (Ganguly et al., 2009). *Agility* is a dynamic capability that facilitates organisational processes of assembling strategic assets mainly to sense, explore, and exploit opportunities to solve problems swiftly through innovation efforts (Goldman et al., 1995). To achieve agility and be able to adapt quickly and competently to business uncertainties, firms are required to formulate dynamic strategies that address new developments in IT and innovations (Bharadwaj et al., 2013; Coltman et al., 2015).

IT is a general-purpose technology that provides important fundamental platforms to embark on technological innovation efforts (Gretton et al., 2003). However, IT business-value is realised through co-existence of information systems and business strategies (Labidi et al., 2016). Organisations that are considered IS innovators often embark on *strategic IS projects* (Piccoli and Ives, 2005) to contain competitive forces and improve performance (Galliers, 2006). These organisations through IS innovative initiatives explore, develop, and exploit business opportunities.

2.4   *Consequential effects of leading technology-driven offensive strategy*

In dynamic banking industry, ISTI is considered a management analytical tool that requires effective management and continuous improvements in the processes involve (Shelagh et al, 2013). With this strategy, banks are able to develop new or improve

features of existing products (Aliyu et al., 2012) and influence or address market instabilities (Kocak et al., 2017). While current firm resources, demands from stakeholders, and competencies drive strategy towards internal challenges; economic environment, market conditions, and competitors drive a strategy towards external challenges (Ward and Peppard, 2002). Banks that devise technology-driven offensive strategy are able to respond to business challenges (Brem et al., 2016), improve business operations and delivery of service (Parasuraman, 2010), and maintain or increase market share (Anderson et al., 2014). The inimitable capabilities of IT make it possible for banks to improve their knowledge and capabilities to innovate (Chen, 2012) that results in a positive innovation performance; a driver of operational and financial performance (Obeng and Mkhize, 2017). According to Gunday et al. (2011), operational performance is an output of innovation performance that acts as a hub to convey the positive consequential effects of innovation types. Consequential effects are the positive, negative, or unchanged outcomes following a change in certain business operational factors.

3   Research question

The focus of this study was to understand the consequential effects on eight (8) universal banks in Ghana for leading technology-driven offensive strategy. Discussions presented at the section of literature review and to minimise straying from the focused area guided researchers to seek answers to questions below.

RQ1   What factor(s) mainly influence the ISTI (technology-driven offensive strategy) activities in your banking firms?

To probe question 1 above for clarity, participants were asked to indicate how the following moderating factors could affect the activities of ISTI.

- collaboration (COLB)
- management commitment (Mco)
- agility (Agi)
- organisational learning (Ole)
- strategic information systems project (SISP).

RQ2   How does leading technology-driven offensive strategy impact your banking firm?

To probe question 2 above for clarity, participants were asked to indicate whether and how they think embarking on ISTI efforts affect each of the following.

- innovation performance (IP)
- operational performance (OP)
- external business challenge (BC).

Figure 1 is the proposed research model that shows how moderating factors, ISTI, and consequential effects are related.

Figure 1   Research model
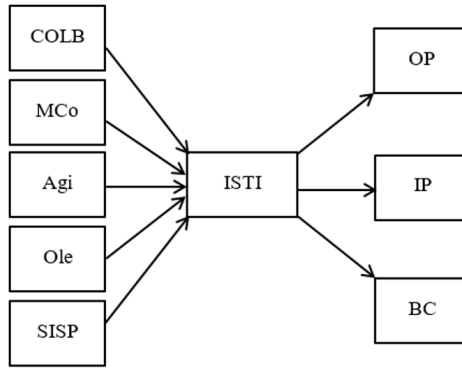
4   Research method

Studies that focus on understanding situations and events surrounding human and complex social systems are required to adopt a holistic approach that can result in detailed descriptions of the phenomenon (Marshall and Rossman, 2006). Conducting qualitative research methodically with sufficient attention to academic consistency, researchers gain an understanding of *why*, *how*, and under *what* conditions certain issues affect social participants (Myers, 2013). The phenomena under study emerge from the interaction among organisations, people, and technology, and such phenomena can be assessed qualitatively (Eisenhardt, 1989; Walsham, 2006). Qualitative method facilitates discovering and interpreting participants' thoughts, experiences, and viewpoints (Denzin and Lincoln, 2005; Merriam, 2009) that results in well-grounded and context-defined findings. A qualitative method is chosen for this research since the phenomena under study needed detailed exploration and understanding in their natural settings (Denzin and Lincoln, 2005) instead of relying on an existing result of a study or predetermined information from the literature (Creswell, 2007).

A qualitative approach could facilitate and expedite the collection of detailed data to view and understand a phenomenon of leading technology-driven offensive strategy in a universal bank. Researchers have to review data collected from multiple sources, including documents, observations, or interviews and group into themes or categories (Marshall and Rossman, 2006). Reporting findings of qualitative research mostly involves summary of categories or frequency tabulation of topics, phrases or words that have been mentioned (Gioia et al., 2013). Researchers have criticised the rigour of a qualitative research due to its subjective nature of interpretation (Babbie, 2010). However, keeping raw interview data and notes, adherence to self-correcting features and following a systematic process (multi-stage of data collection, refinement, and establishing relationship) of grounded theory (Strauss and Corbin, 1990; Charmaz, 2006) exhibit the rigour researchers would like to see in this study.

The study could not adopt a quantitative method due to the small sample size, intended to provide insight and understanding at an individual's level, and either a little or no study has been conducted on the phenomenon among the universal banks in Ghana.

Studies including Pascal et al. (2016) and Broadbent and Weill (1993) adopted a qualitative method to study the alignment between business and IT in the financial sector.

4.1   Data collection and preparation

In an attempt to comprehend and extensively discover relevant factors that impact ISTI, semi-structured interviews (personal interview) were conducted as the established data collection instrument. The scope of exploring the phenomenon was focused. Both subjective and objective responses were obtained using closed- and open-ended questions. Averagely, each interview lasted 45 minutes. The interviewer was permitted to digitally record some of the interviews and wrote additional notes during the interviews. After each interview, the recorded audio was transcribed, and analysis followed immediately. This really helped in probing and restructuring of subsequent questions for interviews. In addition, similar information emerging from the interviews were observed. Participants were presented with cleaned-up transcripts for their comments and corrections if any (Creswell, 2003). Data collection and analysis were done concurrently with the intent of producing empirically valid results that are firmly grounded in the data (Strauss and Corbin, 1990; Charmaz, 2006).

To perform a realistic analysis and comparison, eight universal banks in Ghana (from first quartile[1] group) were selected between 2010 and 2015 (see PricewaterhouseCoopers, 2016). Seventeen (17) participants that hold managerial positions, conversant with business and IT strategies of their banks, and could contribute meaningfully to the study were selected. The participants included six IT/Technology heads, five regional/area managers, one regional/area sales manager, four branch managers, and one branch sales manager.

5   Data analysis results

Using NVivo, a computer-assisted qualitative data analysis software, data from interviews were efficiently managed. Analysis of the data was substantially simplified following the grounded theory coding process. NVivo has demonstrated its capability of facilitating different phases of a grounded theory iterative process by moving the analysis beyond general description to an explanatory model grounded in data (Hutchison et al., 2010). Nodes created in NVivo were structured in a branching tree system with core categories, categories and subcategories. Thus, processes followed in NVivo were iterative where data were imported, explored, coded, queried, reflected, visualised, recorded memo, coded some more, queried and so on. Using NVivo enhanced the validity and reliability of the findings (Zapata-Sepúlveda et al., 2011).

5.1   Data coding

As part of data coding, contextual keywords and frequently occurred words or phrases that were explored and reviewed through word frequency query were saved as nodes (see Figure 2). This contributed to our understanding of participants' views at the *open coding* phase.

Figure 2   Word frequency (see online version for colours)

Figure 3   Coding query (see online version for colours)

Relevant and related text were stored on nodes. Through this, concept(s) that emerged from the data were identified and examined appropriately. In the source documents (interviews transcripts), coded contents were highlighted to track progress of coding.

Redundant concepts were removed through constant revision and comparison of participants' statements. Frequently, data with similarities were coded to nodes and important properties of specific data segments were related to them. For example, participant B02HIT stated that "people are coming from different environments to compete, and there are always new things" and B05BM indicated "the market has become dynamic, because customers keep changing preferences and new market entrants always bring innovation" were coded to a node called *industry threat*. This was linked to an abstract concept (category) of business challenge. Initially, over 300 meaningful ideas (codes) were produced for further analysis. While coding the 17th transcript, very little extra concepts emerged thereby reaching saturation (Miles and Huberman, 1994). Viewing participants, statements of participants, and code density as indicated in Figure 3 contributed to understanding saturation level.

Relationships among concepts at the *axial coding* stage were established by congregating fractured data formed at the open coding stage. Each identified potential relationship was defined and represented as a node. Finally, all extensively discussed concepts that were considered related and among key interests were linked to form abstract concepts (categories). 58 categories were produced at this stage (see Figure 4 and Appendix, *italicised text*).

Figure 4 Subcategory, category, and core category (see online version for colours)
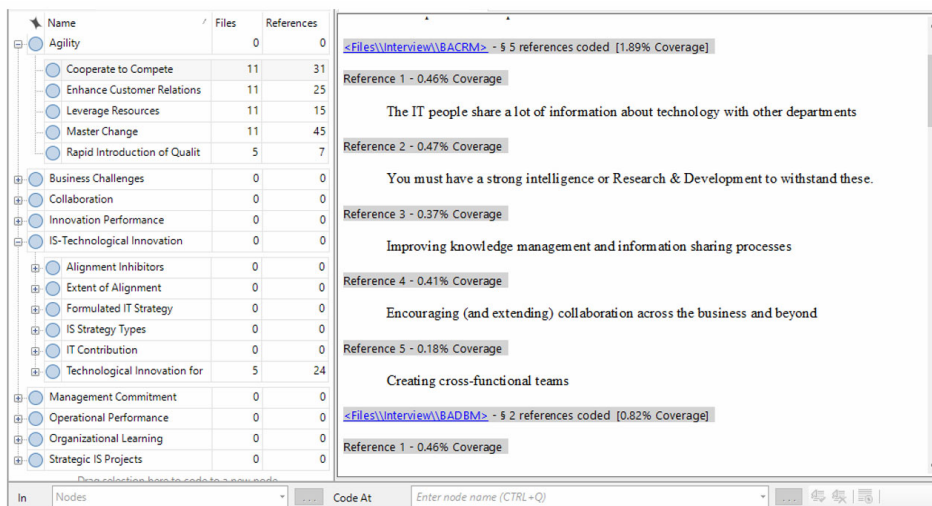
The *selective coding* process integrates and refines the categories formed at the axial coding level into a theory (Strauss and Corbin, 1990). All related categories are linked to a specific core category at a more abstract level of analysis (Strauss and Corbin, 1990). Nine core categories were finally developed from the transcripts (see Figure 4 and Appendix, bolded text). Figures 3 and 4 show some statements of participants that were coded verbatim.

5.2   Relationship analysis

As part of working toward outcomes that were robust, transparent and demonstrate the credibility of findings, matrix coding query, cluster analysis, and group query were performed in NVivo.

5.2.1   Matrix coding query

Matrix coding query performed in NVivo improved conceptual and theoretical development by exploring the associations between concepts and categories. Running matrix coding query to see how participants talked about each core category resulted in Table 1.

Table 1   Matrix coding query (see online version for colours)

Core category	Role = manager	Role = IT head
Agility	77	45
Business challenges	166	45
Collaboration	78	63
Innovation performance	44	57
IS-Technological innovation	149	188
Management commitment	48	23
Operational performance	85	48
Organisational learning	96	79
Strategic IS projects	42	104

5.2.2   Cluster analysis

Cluster analysis was performed using a clustering tool in NVivo to assess the similarity of sources and nodes based on the similarity of words used and coding done. As an exploratory technique, cluster analysis helped in visualising patterns in the data. Horizontal dendrogram, a 3D cluster map, and a summary table of Pearson correlation coefficient were generated as the main outputs. The horizontal dendrogram (Figure 5) shows similar items among categories that are clustered together on the same branch while items that are not similar are further apart. It could be observed from Figure 5 that, ISTI is closer to innovation and operational performance as compare to business commitment. These categories could impact higher on each other than the rest categories.

Figure 6, a three-dimensional cluster diagram shows sources or nodes that have a higher degree of similarity clustered together based on the occurrence and frequency. For instance, ISTI is closely related to innovation and operational performance than commitment.

Using similarity metric (statistical method) in NVivo, correlations between ISTI, factors ISTI impacts, and ISTI moderators were calculated. Summary of the correlation coefficients that were used to create the dendrogram (Figure 5) and the 3D cluster map (Figure 6) are shown in Tables 2 and 3. On Table 2, ISTI and OP has a strong and positive correlation between them (i.e., as ISTI improves, OP also improves), IP and OP;

a moderate positive correlation between ISTI and IP; and a weak positive correlation between ISTI and BC, OP and BC.

Figure 5 Horizontal dendrogram of items clustered by word similarity among categories (see online version for colours)

Figure 6 3D cluster map of items clustered by word similarity (see online version for colours)
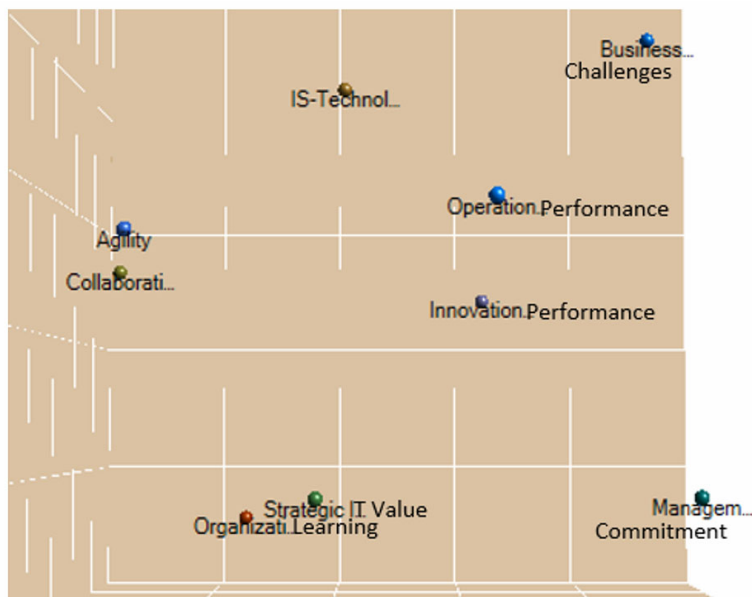

Table 2 A correlation between ISTI and factors that ISTI impacts

Category A	Category B	Pearson's coefficient (r)
Innovation performance	Operational performance	0.7422
IS-Technological innovation	Operational performance	0.644951
IS-Technological innovation	Innovation performance	0.530508
IS-Technological innovation	Business challenges	0.32177
Operational performance	Business challenges	0.221922

Table 3   A correlation between ISTI and moderating factors

Category A	Category B	Pearson's coefficient (r)
Strategic IS projects	IS-Technological innovation	0.634601
Collaboration	IS-Technological innovation	0.313709
Management commitment	IS-Technological innovation	0.287377
Organisational learning	IS-Technological innovation	0.247098
Agility	IS-Technological innovation	0.222244

5.2.3 Group query

Using the group query, associations among categories were identified for further coding. The outcome is the connection map shown as Figure 7. Specifically, IT contribution which is coded at ISTI is linked to SISP/IT capability and OP/Firm performance. Hence, ISTI impacts OP, and SISP impacts ISTI.
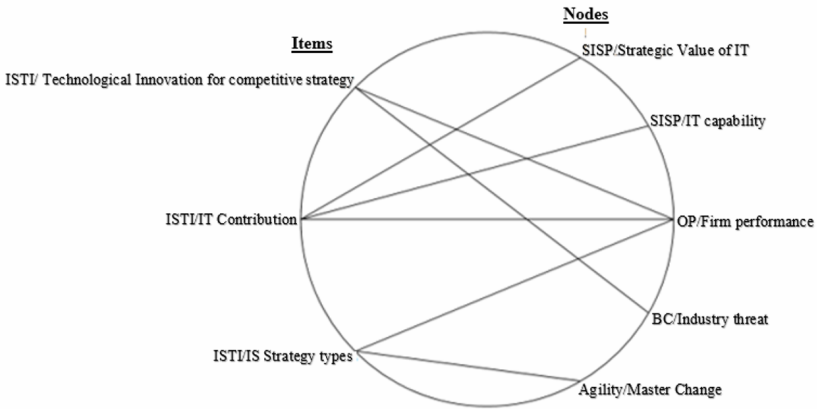
Figure 7   Connection map

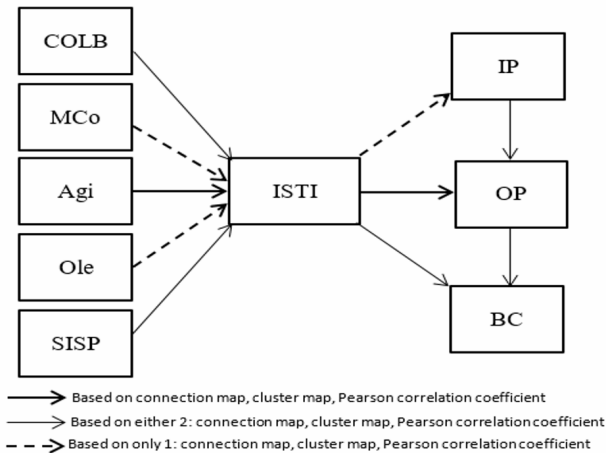**Figure 8**   Updated research model

Figure 8 is the updated research model that was developed based on the relationships identified on Figure 6 and 7, Tables 2 and 3. For instance, the relationships between Agi → ISTI and ISTI→OP were confirmed from Figure 6 and 7, Tables 2 and/or 3.

6 Discussion and conclusions

The study examined the consequential effects of leading technology-driven offensive strategy on external business challenges and firm performance. İn addition, moderating factors of ISTI from the branch, regional and national levels of eight (8) universal banks in Ghana were examined. The findings are broader views of banking employees who hold managerial positions and could not be an absolute fact. However, the conceptualisation and examination of relationships among themes through a grounded theory coding process, recording memos, performing cluster analysis, computing Pearson correlation coefficient, and the group querying to establish association among categories of this study guarantee results that reflect the views of respondents.

6.1 Key findings

The results show that, the selected universal banks strategically utilise information systems to support technological innovation activities with the intent of improving performance and containing business challenges. Moderating factors that influence ISTI initiatives include collaboration, agility, strategic IS projects, organisational learning, and management support. Also, innovation performance strongly impacts operational performance, which in turn impacts moderately on business challenges (see Table 2).

RQ1 What factor(s) mainly influence the ISTI (technology-driven offensive strategy) activities in your banking firms?

- COLB → ISTI (r = 0.313709) is confirmed with a weak positive impact. Our finding is consistent with the assertion of (OECD, 2009; Chae et al., 2014) that, banks through collaboration, a driving force of technological innovation are able to source and apply knowledge, coordinate tasks, and execute roles to create value.

- Mco → ISTI (r = 0.287377) is confirmed with a weak positive impact. This finding is in line with the views of Gartlan and Shanks (2007) that, strong management commitment drives innovation initiatives that eventually contribute to successful formulation and execution of technology-driven offensive strategy.

- Agi → ISTI (r = 0.222244) is confirmed with a weak positive impact. İn a quest to become agile and respond to business challenges, the eight selected banks leveraged capabilities of information systems to improve their business strategies (Bharadwaj et al., 2013; Coltman et al., 2015).

- Ole → ISTI (r = 0.247098) is confirmed with a weak positive impact. Our finding is consistent with (Crossan and Berdrow, 2003; Liao et al., 2010) that, the universal banks used organisational learning as a strategic tool to facilitate the discovery of new capabilities that consequently impacted their innovation initiatives.

- SISP → ISTI (r = 0. 634601) is confirmed with a strong positive impact. Through IS innovative initiatives, the universal banks in Ghana embarked on strategic IS projects to exploit business environment opportunities (Piccoli and Ives, 2005) in an effort to address industry challenges and improve performance (Galliers, 2006).

RQ2   How does leading technology-driven offensive strategy impact your banking firm?

- ISTI → IP (r = 0.530508) and (ISTI → OP (r = 0.644951) show ISTI impacts positively on innovation performance and operational performance. The eight universal banks in Ghana formulated technology-driven offensive strategy to realise and/or sustain inimitable capabilities to enhance performance. They used the unique capabilities of IS to improve knowledge and capabilities to innovate that resulted in a positive innovation performance (Chen, 2012) and improved operational efficiency (Parasuraman, 2010). With this, they could influence or respond to business uncertainties (Kocak et al., 2017).

- ISTI → BC (r = 0.32177) indicates ISTI offensive strategy impacts on business challenges positively. According to Schumpeter (1934), technological innovation is a major contributor to competitive advantage that critically influences external business challenges. Also, firms can withstand business challenges and market forces using IS to support their offensive strategies (Spanos and Lioukas, 2001).

Another finding is a strong positive relationship (r = 0.7422) between IP and OP. Our finding is contrary to the views of Rogers (2003) and Bryson et al. (2007) that, firms that regularly execute innovation activities to achieve improved innovation performance are able to address business challenges effectively. The findings of this study suggest that, operational performance is an output of innovation performance that acts as a hub to convey the positive effects of innovation types (Gunday et al., 2011; Obeng and Mkhize, 2017) on business challenges.

6.2   Contribution of the study

This research contributes to the field of strategic management in a financial sector. Practically, it offers valuable guidelines to the management of banks. The results provide managers with reliable and actionable insights that could empower them to comprehend and delve more deeply into leading technology-driven offensive strategy to influence external business challenges and improve performance of their banks. Managers could also be able to make an informed decision on information systems investments to transform business strategies, facilitate different streams of innovations, and increase competitiveness. Thus, as part of their strategic choices, management of the universal banks would understand how to lead a technology-driven offensive strategy thereby balancing strategic inputs.

In academic, contribution is made to the current discussion of organisational sources of sustainability in relation to the effects of certain resources in a given industry. Additionally, employing a qualitative methodological approach provides significant theoretical insights and further understanding of complex interrelationships between strategic management processes and conditions for achieving sustainable competitive advantage considering the causal dynamics between ISTI, moderating and mediating factors of organisational effectiveness (innovative, operational, and financial performance).

6.3   Limitations and recommendations of future research

One of the important areas of research in recent time is how organisations can successfully formulate and implement technology-driven offensive strategies. Our findings could serve as the basis for further study into how banking firms embark on ISTI initiatives as one of the technology-driven offensive strategies. Since the focus of the study was on a banking industry, the identified moderating and mediating factors are not generalisable to the entire financial industry. Using a more representative sampling strategy, a survey method and including more diversified and comprehensive ISTI moderating and mediating factors to conduct this study in other financial institutions could provide a generalisable result for the financial industry.

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Notes

1   Grouping of banks based on the book values of total operating assets such as cash and liquid assets – investments, net loans and advances as at 31 December each year.

Appendix

Generating core categories from categories

Core category and category	Role = manager (11)	Role = IT head (6)	Total (17)
Agility			
Cooperate to compete	24	7	31
Enhance customer relationship	14	11	25
Leverage resources	10	5	15
Master change	29	16	45
Rapid introduction of quality and cost-effective products	1	6	7
Business challenges			
Balance sheet management	14	3	17
Competition	20	1	21
Cost management	22	5	27
Customer management	24	9	33
Industry threat	14	5	19
Innovation	28	4	32
Mergers and acquisitions	6	2	8
Organizational restructuring	14	4	18
People management	7	4	11
Risk management	20	8	28
Collaboration			
Business-IT communication	27	15	42
Established organizational structure and culture	4	1	5
Flexible organizational structures	3	6	9
Functional engagement	2	6	8
Improved communications between IT and business	1	4	5
Internal communications with IT	0	4	4
Partnership	38	22	60
Strategic technologies for business relationship	4	9	13
Innovation performance			
Impact on firm performance	10	21	31
Innovation performance goal	10	15	25
Innovation performance metric	24	13	37
Leveraged old products	0	4	4
New business model	0	4	4

Generating core categories from categories (continued)

IS-Technological innovation			
Alignment inhibitors	6	6	12
Extent of alignment	6	7	13
Formulated IT strategy	6	4	10
IS strategy types	67	78	145
IT contribution	21	40	61
Technological innovation for competitive strategy	221	258	479
Management commitment			
Budget allocation	14	8	22
IT projects decision making	27	12	39
Management support & personnel competency	7	3	10
Operational performance			
Better returns on investment	0	4	4
Firm performance metric	45	20	65
Gained advantage using unique IT products	0	4	4
Measure performance with profitability	7	0	7
Operational cost reduction	2	5	7
Performance measurement system	22	3	25
Positive effect on firm performance	9	13	22
Positive effect on organizational brand	1	4	5
Organizational learning			
Improved utilization of IT resources	8	9	17
IT knowledge	0	4	4
Knowledge acquisition	29	18	47
Knowledge dissemination	25	17	42
Knowledge responsiveness	20	15	35
Leverage strategic assets for innovation	5	8	13
Organizational memory	9	8	17
Strategic IS projects			
IS competence	4	30	34
IS resources	11	13	24
IT capability	0	12	12
IT strategy	5	10	15
Mass customization of products	2	4	6
Strategic value of IT	20	35	55
Total	*969*	*866*	*1,835*