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Building Ambidexterity in Libraries: Role of competitive intelligence

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Abstract

Academic libraries are increasingly becoming affected by rapid changes in information technology, competition from the private information sector and fear of losing the monopoly position. Academic libraries' dilemma is evident, based on the declining support from parent institutions and declining use trends. In the face of stiff competition, their reaction has to be quick to preserve their place. Academic librarians cannot efficiently prepare for the future or position themselves until they create a balance between exploitation and exploration. To remain relevant, librarians must re-strategize by building ambidexterity into the library through competitive intelligence (CI). The article explores a structural approach to applying CI to build ambidexterity in academic libraries. The article also identifies the effects of competitive intelligence in a library. The article concludes that it is pragmatic for academic libraries to adopt competitive intelligence to bring about ambidexterity to guarantee academic libraries' survival and competitive advantage.

Keywords: Ambidexterity, Competitive Intelligence, Academic Libraries

Introduction

Globalization has increased competition and businesses (including institutions) turn to competitive intelligence as a tool to help leverage competitive advantage (Pellissier & Nenzhelele, 2013). In several organizations, there are constant calls for the ability to respond, adapt rapidly and thrive in a changing environment (Holbeche, 2018). The competitiveness is driven by rapid changes in markets, customer demands, preferences and tastes, technologies, global boundaries, products, processes, new competitors entering the marketplace and current competitors offering new products (Ncube, 2015; Gunasekaran et al., 2017; Moneme et al., 2017; Tahmasebifard and Wright, 2018). Like every other institution, academic libraries are challenged to adjust to new paradigm shifts as they strive to play their roles as essential

information providers in their respective academic communities. Rapid changes in information technology fuel the competitiveness in the academic library space, competition from the private information sector, fear of losing the monopoly position and declining use trends (Kiran, 2010; Krubu and Osawaru, 2010; Jantz, 2012; Farney and McHale, 2013). Also, Cox (2018) submits that institutional leadership no longer perceives the library as the campus's heart due to other academic and research information sources' availability. However, for libraries to stay in business and gain a competitive edge, they must re-strategize and adopt a business-minded approach to the services they offer. For survival and sustained relevance, their response has to be rapid.

This is why market incumbents, just like the library, strive to develop capabilities that enable them to leverage their strengths (e.g., market position, product know-how, etc.) and simultaneously explore the possibilities of digital technologies for innovation (Kaulio, Thorén & Rohrbeck, 2017; Svahn, Mathiassen & Lindgren, 2017). Innovation is a prerequisite of retaining competition (Khajeheian and Tadayoni, 2016). Innovation is not merely the incorporation of new technologies into new products or services, but in many cases, it involves finding new models of doing business in the face of change and opens up new opportunities (Khajeheian, 2016). Therefore, innovation can be understood as managing incremental (exploitation) and revolutionary (exploration) change at the same time. To overcome the pressures between exploration and exploitation, ambidexterity is essential and can be defined as the ability to manage both (Croasdell et al., 2020). To master ambidexterity in a library context, it is necessary that the individuals who manage the library also possess specific capabilities that facilitate ambidexterity. Therefore, to gain these capabilities for library survival and success, CI is essential.

Competitive intelligence is a global trend on the rise in organizations and industries (Ahmed et al., 2014). It assists the organization in competitive positioning and strategic judgment on factors that could affect the business environment by developing suitable plans immediately (Ghannay & Mamlouk, 2015). It involves collecting and analyzing information about competitors and consumers to formulate an actionable business strategy. Competitive intelligence helps retain and satisfy customers by revealing the strategies and tactics of competitors, the competitors' level of control or share of the market, their strengths, weaknesses, and the combined effect of all those mentioned above on the library (Halder, 2009). In today's unpredictable economy, the application of CI for building ambidexterity into a library is a proactive technique for creating value and sustaining the future.

Objectives

This work's major objective is to use a structural approach in applying CI in building ambidexterity in academic libraries.

Other specific objectives are to:

- i. examine the concept of ambidexterity;
- ii. examine the levels of ambidexterity;
- iii. identify the effects of competitive intelligence in a library;
- v. recommend the structural approach of ambidexterity using competitive intelligence.

Theoretical framework

Lewin's change management model

One of the essential theories for understanding organizational change is Lewin's 3-step model. This model was created in the 1950s by psychologist Kurt Lewin. Lewin noted that most people tend to prefer and operate within certain safety zones. He recognized three stages of change. Lewin's model is referred to as Unfreeze – Change – Refreeze (Khanye, 2017). The three-step model is intended to initiate a process that promotes permanent organizational change.

The theory is amenable to libraries. Academic libraries can adopt and adapt the Lewin's three stages of change management since the elements of the three stages blend well with academic libraries' service offerings. Applying the three stages (unfreeze, freeze and refreeze) will help transfer knowledge from exploration unit to exploitation unit, thereby guaranteeing ambidexterity.

Concept of Ambidexterity

Rothaermel (2015) defines the ambidextrous organization in terms of an organization able to balance and harness different activities in trade-off situations. It is the simultaneous pursuit of and balance between exploitation and exploration (Hsu et al., 2013). Therefore, accomplishing ambidexterity is problematic, exploration and exploitation conflicted, the former premised on path-breaking technological change, the latter on path entrenching incremental improvements to products and processes (Lavie et al., 2010). Getting the balance right between exploration and exploitation is core to corporate strategy (Raisch et al., 2009). Additionally, Turner et al. (2018) state that the combination of exploitation and exploration is especially appreciated when considering how complexities are approached. An organizational contradiction of exploration and exploitation is that exploitation generates the income needed to supply future exploration and exploration, generating future exploitation opportunities (Hughes, 2018). However, organizational survival demands that executives press forward, striking a new balance between innovation pathways while abating organization tensions through appropriate management actions. Thus, ambidexterity is the organization's expressed capability to manage the tensions generated by the contradictory demands of exploration and exploitation. When managers resolve paradoxical tensions, they contribute to an organization's ability to simultaneously pursue conflicting goals, which is the core of ambidexterity (Gregory et al., 2015).

Raisch et al. (2009) emphasize three ambidexterity levels: organizational, group/team and individual. Ambidexterity can also be seen as "nested", in other words, availability on several levels simultaneously within the same organization (Birkinshaw & Gupta, 2013). Nevertheless, research spanning several analysis levels is scarce (Raisch et al., 2009). Most ambidexterity studies are focused on the organizational level (Laureiro-Martinez et al., 2010). According to Raisch and Birkinshaw (2008), the analysis level is exceptionally essential because how to solve the tension at one level of analysis is often resolved at the next level down. A single team may also become ambidextrous by assigning diverse roles to each team member. O'Reilly and Tushman (2004) contend that one of the most vital lessons is that ambidextrous organizations need ambidextrous leaders. Laureiro-Martinez et al. (2010) are in a similar vein when they contend for an improved understanding of the individuals, their underlying nature, selections, capabilities, purposes, expectations and motivations.

Dimensions of ambidexterity

Ambidexterity achievement depends on how it is conceptualized and if exploitation and exploration are perceived as competing with or supplementing each other (Papachroni et al., 2015). Therefore, exploration and exploitation are the two dimensions of ambidexterity.

Exploration:

Exploration is inextricably linked to research, diversity, risk, experimentation, and discovery. Organizations use it to add new and different values to what already exists and achieve more varied dividends in the long term (Park & Kim, 2015). Exploration involves preparing for the future by discovering and developing new products, markets and technologies (Raisch and Zimmermann, 2018), leading to more radical innovation (Derbyshire 2014). Exploration is viewed as a risky undertaking that requires more resources and effort than exploitation. Exploration may require a search for new resources and cooperation beyond organizational boundaries. We need to note that the new knowledge acquired for the organization is the key to exploration (Zang, 2018). Exploration involves moving away from existing skills and technologies to create new goods and services. This results from applying new knowledge and requires that organizations engaged with exploration be more flexible, enabling them to better respond in an unstable environment (Hong, Hou, Zhu & Marinova, 2018).

The organization aims to use this type of strategy to improve competitiveness in the long run and to improve future income (Li, Zhou & Si, 2010) by searching for multiple interpretations of the available data and diversified research to find new solutions to problems. This is linked to double-loop learning (Park & Kim, 2015), which grants the organization the ability to deal with changing environments and open up new business opportunities. Thus, the businesses can deliver new products that are entirely different from the existing ones, which, in turn, improves their overall long-term performance (Popadic, Pucko & Cerne, 2016).

Exploitation

Exploitation is linked to deepening the organization's experience through improving their operation and quality of the result, saving cost, time, and existing knowledge, and developing existing goods and services, all with the end goal of maintaining their current market share (Li, Gao, Shen & Zhang, 2018). Exploitation denotes the refinement and extension of current knowledge, leading to incremental innovation as organizations strive to extend their products' life cycle as long as possible before they expire and exit the marketplace (Broekhuizen, Giarratana & Torres, 2017). Also, the cost of exploiting opportunities is often less than the cost of exploring opportunities (Popadic & Cerne, 2016; Popadic et al., 2016).

When utilizing the exploitation strategy, a company aims to meet existing customers and markets' needs by exploiting existing opportunities like technologies or skills to achieve a gradual improvement in existing products or services (Hong et al., 2018). This is because it aims to increase efficiency in the short term and improve its current income. Organizations that use exploitation strategy need to collect information about current issues, analyze these problems, and search for solutions by improving technologies or products. Finding solutions leads to personnel' opportunities to search for new knowledge and produce new ideas (Hong et al., 2018).

Types of ambidexterity

Research in the past has recognized four primary ways for dealing with the conflicting demands of exploitation and exploration. This includes structural ambidexterity (organizational

separation), sequential ambidexterity (temporal separation), domain separation and contextual ambidexterity (Hughes, 2018).

Structural ambidexterity. Within structural ambidexterity, exploration activities and exploitation activities are separated into different business areas within one firm (Chen, 2017). This allows the different business units to adopt different strategies and structures to fit the business unit's focus on exploration or exploitation (Chen, 2017). Structural ambidexterity is composed of several subunits that are internally firmly coupled but loosely coupled to each other. Hughes (2018) states that such a structural resolution to balance exploitation and exploration suits large organizations better than small ones.

Sequential ambidexterity. Sequential ambidexterity is based on temporal separation, where firms shift the focus of their attention from exploitation in one period of time to a focus on exploration in the next period (Chen, 2017). According to Papachroni et al. (2015), this form of ambidexterity is called temporal separation. An example of sequential ambidexterity is when a person focuses more on exploration in the early stages of a project and on exploitation at the end of the project during production/implementation. Sequential ambidexterity is engrained in the idea of punctuated equilibrium. It tends to attain a temporal driving among extended periods of exploitation and short bursts of exploration in an organizational unit. This can be an alternative balancing mechanism.

An advantage of sequential ambidexterity is that it allows project-based firms to apply different managerial approaches to projects in different stages (Chen, 2017). However, this implies that a sequential ambidextrous firm can rely on the transformational capability to switch between exploitation and exploration states and effectively incorporate an implementation capability to achieve the best results in each state (Kortmann, 2012). Additionally, the switch from one state to the other can be highly disruptive to the organization since it involves the reconfiguration of strategies, structures and processes and therefore can take a long period and cause dislocations within organizations and have the potential to diminish core capabilities of the firm (Chen, 2017)

Contextual ambidexterity. Contextual ambidexterity is the behavioral capacity to simultaneously pursue conflicting demands, such as exploitation and exploration across a business unit (Pellegrinelli et al., 2015). These conflicting demands are affected by how goals are set, by staff recruitment, incentive systems and organizational culture (Eriksson, 2013). Contextual ambidexterity is achieved by building processes that allow and encourage individuals to make their judgments about how to divide their time amongst conflicting demands for alignment (exploitation) and adaptability (exploration), rather than by creating dual structures (Tushman & O'Reilly, 1996).

Competitive Intelligence

Buzzerio and Marcondes (2014) defined competitive intelligence as the course of acquiring information from various sources, analyze and apply it to industry, organization, or project. Competitive intelligence is more than analyzing players in an industry; it encircles the whole atmosphere and participants such as clienteles, players, distributors, skills, and macroeconomic information, as ascertained by Viviers & Muller (2015). Schmidt (2015) demarcated CI to be a structured and honest program for collecting and operating instructions or details that can influence an organization's determination and performance. CI allows companies of various sizes to make a concrete agreement to attain their aims and aspirations. Muritala & Ajetunmobi (2019) stated that CI encompasses the application of official resources in expanding knowledge

on rivalry, challengers and the business community. It, therefore, converts by interpreting that evidence into knowledge and skills. Furthermore, Papik (2017) affirmed that focused definitions of CI consider it as the company's purpose responsible for easy and immediate recognition of dangers and prospects in the business environment before resulting access evidence or pronouncement.

Abolarin & Yaya (2015) viewed CI as publicly essential to challenges with the provision of a continual competitive edge. The components of CI are the identification of patrons' interests, gathering and information interpretation with the provision of intelligence for policymakers, stakeholders and strategists. Therefore, it becomes apparent that CI is a thin action within library activities searching for pertinent information in all sources, capturing and communicating routine that looks forward to preparing the organization to compete favorably in varying environments. Considering the myriad of problems, especially reduced patronage facing academic libraries, information professionals are expected to be competitive in using competitive intelligence. CI includes the following processes: defining, gathering, analysis and distributing information that is used in decision-making and, therefore, facilitates strategic planning in an organization (Gauzelin & Bentz, 2017; Plessis and Gulwa, 2016).

Application of Competitive Intelligence to ambidexterity

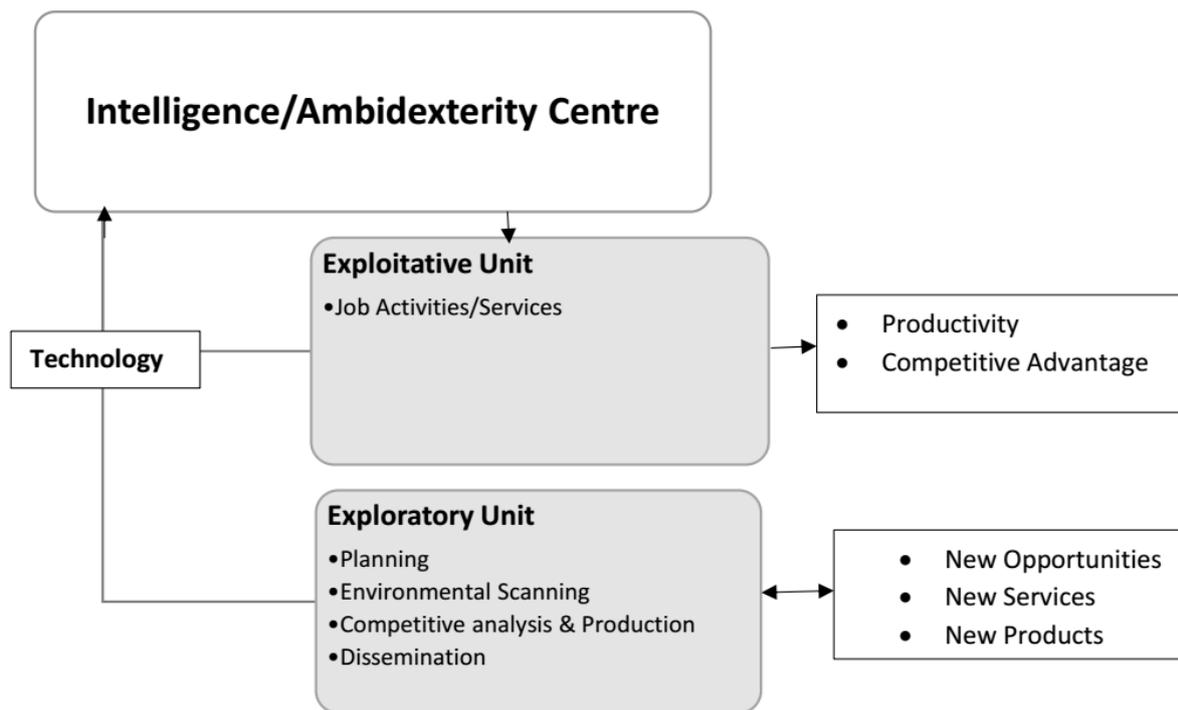


Figure 1- Structural approach to Competitive Intelligence and ambidexterity

Structural approach

Structural ambidexterity is widely regarded as the most practical and promising form of creating an ambidextrous organization (Chen, 2017). Because exploration and exploitation require seemingly contradictory organizational characteristics, companies have to separate exploitation from exploration in different organizational units: the subdivision of organizational tasks and domains across units (Jansen et al.,2012). For example, main business

units may focus on alignment and exploitation, while research and development units may emphasize exploration (Diaz-Fernandez et al., 2017). Thus, structural differentiation may help ambidextrous firms to maintain several capabilities that address conflicting demands (Gilbert, 2005). In ambidextrous organizations, structural differentiation may result in exploitative and exploratory units in different places (Benner and Tushman, 2003). Several scholars have argued that simultaneously conducting exploitative and explorative activities is not a simple task as these activities require different capabilities and organizational routines (Diaz-Fernandez et al., 2017). Therefore, structural differentiation can be a useful organizational characteristic to address the strain between exploration and exploitation. Thus, each type of activity gets its own organizational space (De Visser et al., 2010). Furthermore, differentiation protects present operations in exploitative units from interfering with emerging capabilities developed in exploratory units. Consequently, exploratory units can enjoy the flexibility to develop new knowledge and skills (Jansen et al., 2009).

Exploratory Unit

Exploration focuses on developing novel ideas and activities aimed at entering the new product and process domains (Yeganegi et al., 2019). This is why the major CI stages would be carried out. It includes planning, environmental scanning, analysis, and dissemination.

Planning

This stage includes deciding what intelligence it requires and the direction to pursue. The planning phase depends on the type of information an organization considers necessary for its decision-making process. This can be influenced by the type of monitoring activities a company wants to perform, the relationships a firm has with other actors in the market, the knowledge a firm already has about other participants in the market and the environment a company is in (Chevallier et al., 2016).

Environmental Scanning/collection: This is where the organization's environment is scanned and essential information is collected for intelligence purposes is accomplished. Understanding environmental forces, such as competitors' dynamics and activities, may alert an organization and enhance its responsiveness to the market (Tuan, 2016). This could include intelligence collected on customers, suppliers, the focused collection of information from various internal or external sources to the company technologies, environments and potential business relationships. (Sewdass & Du Toit, 2014).

Analysis and production:

The analysis phase is the most challenging part of the intelligence cycle since it requires highly skilled practitioners. Information is converted into actionable intelligence on which strategic and tactical decisions may be made. This step also requires identifying patterns, communications, distributors, customers, and competitors' affairs (Bose, 2008), interpreting and translating raw data into organized and interpreted data to identify patterns, procedures, and mutual relationships with competitors (Miller, 2001). More specifically, the person executing such an analysis needs to evaluate information, look for patterns and come up with diverse scenarios based on what the analyst has discovered (Nikolaos and Evangelia, 2012).

Dissemination: The final stage in the CI process, making decisions based on the gathered information from the analysis phase, disseminating the data through an ethical and systematic procedure (Silva et al., 2019). This is the final stage of the intelligence cycle. It is the stage where the CI practitioner communicates the decision-makers' analysis results. The analyst

must suggest possible courses of action based on the work analysis and provide useful recommendations supported by logical arguments.

Exploratory Output:

Firms follow exploration strategies to spot new opportunities in the market, identify customers' needs, or create new demand by anticipating potential desires. Exploration is oriented towards disruptive innovation practices, products and technologies (O'Cass et al., 2014). Exploration allows firms to acquire and create knowledge and information from any angle of the organization's surroundings; thus, it comprises undeveloped skills and searching for new information (Jurksiene & Pundziene, 2016).

Through collaboration and interaction with various individuals, firms and partners, new information is acquired, which facilitates creativity (Benitez, Castillo, Llorens, & Braojos, 2018; Bican, Guderian, & Ringbeck, 2017), and ultimately results in radical innovations. Nonetheless, exploration activities help detect failure and deficits within current firm practices and allow the firm to develop new competitive advantage sources (O'Cass et al., 2014).

Intelligence/Ambidexterity (IA) Centre: This is the center that ensures that the balance between exploitation and exploration is maintained. It is where CI and ambidexterity match. CI is an organization's mechanism that facilitates transforming competitive information into practical actions, and thus, the organization further engages in ambidextrous strategies to gain a competitive edge (Tuan, 2016). From this perspective, the focus of the organization is on matching the exploration-exploitation balance to the contextual requirements (Stieglitz et al., 2016). So, CI is vital in shaping a company's strategy (Gauzelin & Bentz, 2017).

After the explorative unit has made discoveries, it is then disseminated to the IA center. At the IA center, the decision-makers determine whether to accept or reject the discovery. If accepted, then the process of incorporating it into the exploitative unit will begin. This process will include adopting change management. In times of crisis, there is often the desire not to change but weather the storm. An alternative view suggests that, in those times, firms need to embrace change to enhance their survival chances (Amankwah-Amoah, 2016)

Exploitative Unit

Job Activities/ Services: This involves the exploitative work carried out in the organization. It involves the organization's routine jobs; the product or services they offer. The focus is to maintain and improve the current work to become productive and gain a competitive advantage. However, the exploratory unit's discoveries will be sent through the IA center to this unit. Therefore, these unit personnel would have to adjust their work to implement the discovery. This is made possible through change management.

Technology

Technology is vital for CI and ambidexterity as it drives the process. In today's economic context, featured by the competitive intensity and acceleration of technological change, firms' innovative capacity is considered crucial for current and future competitiveness (Petruzzelli et al., 2015; Soto-Acosta et al., 2017). There are several technologies to consider in the CI's application; however, we will focus on a few important ones.

Artificial Intelligence: The term "Artificial Intelligence" refers to machines that can perform tasks that would necessitate intelligence if done by humans (Scherer, 2016). Compared to other forms of technology with predefined applications and limitations, Artificial Intelligence presents the advantage, which goes a step further by not merely applying pre-programmed

decisions but instead exhibiting some learning capabilities (Makridakis, 2017). The possibilities AI presents are numerous. In combination with the software, it can be applied for different tasks. Software and AI-powered technologies can now retrieve information, coordinate logistics, handle inventories, prepare taxes, provide financial services, translate complex documents, write business reports, prepare legal briefs, and diagnose diseases (Acemoglu, Restrepo, 2018), which shows the range of capabilities AI can be used for. One significant aspect of AI, considering the developments in CI and the storage of large amounts of data, is presenting solutions regarding the problem of compressing data to communicate it or store it in a few bits are possible, in such a manner that the original data can be recovered exactly from the compressed data (Ghahramani, 2015).

Web Mining is a methodology for retrieving information that allows processing and capturing useful information from web pages and documents on the Internet (Silva et al., 2019). This technology is being used to capture big data and other online resources.

An information security system is essential for the success of CI. Therefore, there is a need to protect data gotten from intelligence activities from a hacker, virus, and competitors. The focus should be directed towards strengthening information security systems, information resource sharing systems, confidential information protection, and information audit system construction.

Exploitative Output

Exploitation enables firms to stay competitive and continuously meet demands by updating existing products and services, applying existing knowledge while increasing productivity, minimizing failure and continuously developing actual knowledge (O’Cass et al., 2014). While exploration aims for higher flexibility and discovery of new knowledge, exploitation facilitates improvement, summarisation and efficiency in every area (Hu & Chen, 2016). Exploitation also helps organizations gain a competitive advantage after applying CI initiatives. CI helps organizations develop and sustain distinct competitive advantages by drawing on the organization’s networks to develop actionable insights about various business environment components (West et al., 2015).

Arrigo (2016) suggests that the CI process main output should be to make the right forward-looking decisions to be the leader. Organizations that adapt their strategies based on this continuous flow of information will enhance their competitiveness relative to the organization that does not attempt to adjust or adapt to be informed faster about environmental changes. Competitors’ data as sensitive information could gear up the market competitors to stand on their toes and act as quickly as possible before their market takes from them. Hence, any companies in the market settings that can identify this gap and make effective use of it as a chance will have a competitive edge over others in the market, which will tend to increase organizational profitability, productivity and effectiveness (Ade, Akanbi, & Tubosun, 2017).

Application of CI & Ambidexterity to Academic Library

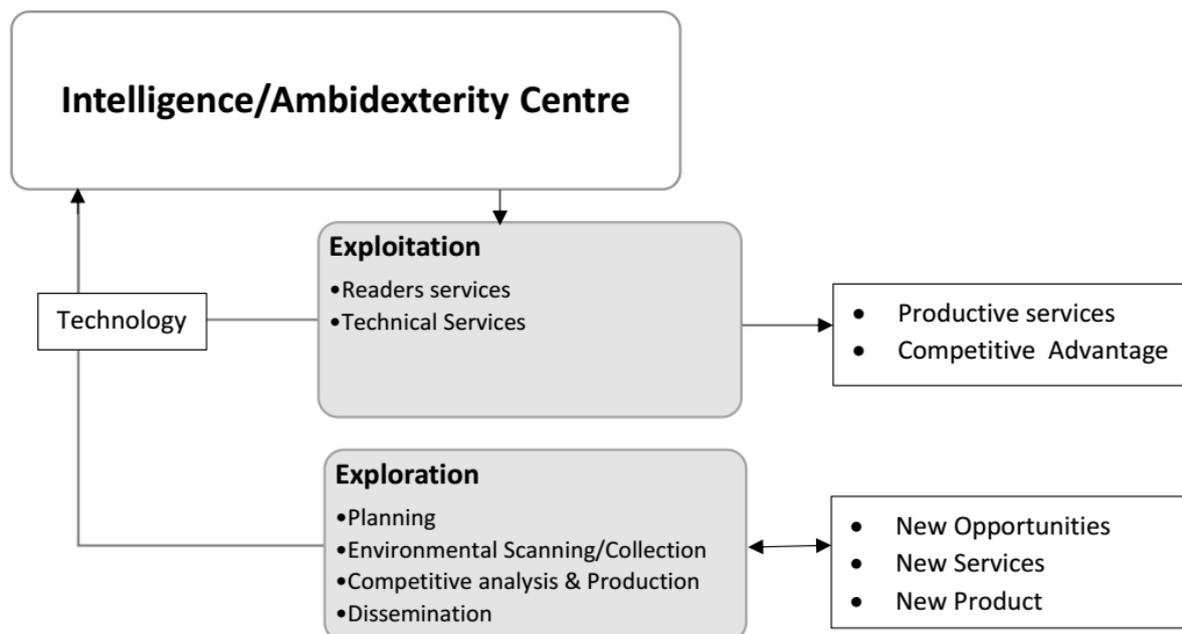


Figure 2 - Structural approach to Competitive Intelligence and ambidexterity in library

The recent rise in quality of the tertiary institutions had led to the increased enrolment, which had significantly resulted in attracting the best brains, stimulating breakthroughs in research, pioneering centers of excellence, production of first-rate graduates and getting listed in top ranking league tables (Idiegbeyan-ose, Christopher & Osinulu 2017).

This occasion has achieved a paradigm shift occasioned by stiff rivalry among the establishments and a parameter for competitive advantage in this current circumstance is the value of the academic library. Haliso and Aina (2012) saw that there is the probability of rivalry among different academic libraries, including public, states and private universities, and this has required for the appropriation of CI as any library that gives quality information resources that are sufficient, current and important will likely meet the information needs of its clients. CI will be applied to the library to achieve ambidexterity in the library.

Exploratory Unit

This library unit would be in charge of using CI to develop new ideas, services, and opportunities.

Planning

This is the stage where the library decides the intelligence to pursue. The could be intelligence about their services or competitors.

Environmental Scanning/collection:

At this stage, the library decides to pursue the intelligence and then gathers them for analysis.

Analysis and production:

The library then interprets the gathered intelligence and makes inferences from it. This process may lead to new ways of rendering reader's services or marketing library services for the library.

Dissemination: The result of the analysis is then transferred to the intelligence unit.

Intelligence/Ambidexterity (IA) Centre: This is the brain center of the whole process. It is where vital decisions are made regarding the transfer of new discoveries into the library's daily activities. It is also the unit that initiates the process of change management.

Exploitative Unit

Job Activities/ Services: Libraries services are generally grouped into two: technical and readers' services. CI can be used across these services. As described by Uzohue and Yaya. (2016), the need to use CI approaches in Library and Information Science discipline is growing, decision-makers are starting to spot the importance of CI in libraries and other organizations in human society (Uzohue & Yaya. 2016). Mbofung and Popoola (2014) also noted that library service delivery involves individuals who have expectations of the librarians regarding how they relate and behave towards the users, colleagues, organizations, and society.

Technology

As shown in Figure 1, technology is vital as a driver of the CI and ambidexterity process. According to Christopher and Osinulu (2017), academic libraries can be on the competitive edge with the use of social media for service delivery in the areas of selective dissemination of information; abstracting and indexing services, current awareness services, bibliography compilation and reading list, new arrival services and so on. Gilad (2016) established that to anticipate transitions in industry structure, the competition analyst must track four major change drivers. Technology was identified as the first. Gilad noted that the technological changes can be in the form of disruption but also as an advantage used by rivals, suppliers, or even a buyer.

The transition process from the explorative unit to exploitative unit

Change management is essential for the transition period. The IA units must be ready to go through the three stages of transition stated by Kurt Lewin.

Unfreeze – Upon realizing that the library needs to change, the first step is to “unfreeze” your current process. Lewin under such calls for an unfreezing process by way of (Blomqvist, 2017) mention that there is a need at this stage to communicate convincingly the reason why the old ways of doing things are no longer acceptable, why it needs to change, what changes are being suggested, and what benefits those changes will bring. This should help convince them of the need to change and encourage them to stick to the new process.

Transition (Change) – Once the change is initiated, the library moves into a transition period, which may last for some time. Good leadership and reassurance are necessary for the process to be successful. At this stage, the organizations will start to accept, believe in the new changes, and act accordingly. The personnel are also expected to be part of initiating the new changes. In the change stage, it is expected that the organization takes an intense initiation in promoting effective communications aimed at fully supporting the personnel to adopt the new ways of new work-related values, attitudes and behaviors (Regenesys, 2015; Khanye, 2018).

Refreeze – This stage involves those activities whereby change has been successfully accepted for implementation and the organization regains stability again as the staff refreezes under new changes and guidelines. Motivation in the form of rewards and acknowledgment become tools of re-enforcing change. The Refreeze stage is essential for not letting individuals get back to their old habits but also with the new trend. In this stage, it is also still important to monitor

that people do not fall into their old habits and be aware of problems and solve them as and if they were to happen.

Exploitative Output

The result of the library's explorative process is enhanced productivity, improved library services, and attainment of competitive advantages. These benefits continue to increase as more discoveries are generated and transferred to the exploitative unit.

Barriers of applying CI to ambidexterity in libraries

Library Finance: Finance is a significant challenge in libraries. This is because libraries are not profit-oriented and depend on parent organizations for sustenance. This makes the application of CI to ambidexterity difficult.

Lacking CI skillsets: CI requires specific technological and managerial skills lacking in many libraries. This is verified by Roknuzzaman and Katsuhiko (2013), who claimed that many Library schools do not offer CI courses. Also, it is opined by Papik (2017) that while it is essential to acquire degrees, the ability to innovate using a mix of advanced analytics and data mining skills is of great necessity to libraries.

Resistance to Change: Library personnel resistance to change is a significant barrier to ambidexterity. Library personnel accustomed to a particular way of functioning tend to avoid doing something new over a long period. They do not want to change to new processes. For a library to exploit and explore, it must change. Change initiatives help adapt to the innovations, internal processes, the latest technological advancements, and more.

Conclusion

Librarians must continue to reinvent and strategize through CI to position themselves for increased visibility, increased patronage, greater customer satisfaction and retention, and support from the parent institution. Competitive intelligence is a vital parameter to consider in achieving ambidexterity in academic institutions. Therefore, the application and integration of CI strategies into balancing exploitation and exploration offers the library a unique transformation potential. As seen in the article, adopting a structured approach through CI requires technology. Technology goes a long way to alleviate some of the challenges facing the implementation of CI. Academic librarians, Library associations at various levels, and library and information science departments need to take the bold step of modifying or redesigning their library and information science (LIS) curricula. The new curriculum should teach emerging CI skills to the extent that the library departments' graduates will understand and implement CI effectively in the workplace using technology and all related tools.

Recommendations

New sources of Finance: Libraries must source for finance other than parent organizations. Infopreneurship can be adopted as it is seen as a way that can bring financial satisfaction to librarians (Adetayo & Hamzat, 2021). Other sources of finance are grants, donations, and partnerships.

Technology Training: Technology changes and impact permeate many human work processes (Mishra & Koehler, 2006). Librarians should harness, exploit, and take advantage of all types of technology through acts of innovation and product differentiation. The library needs to demonstrate superiority over other channels by influencing usage and manipulation of

information and communication technology products and services. Therefore, this calls for a need for continuous training of librarians in technology use.

Managing Change: According to Adeyoyin et al. (2012), change is so vital to everything in the world that it is the most acute complication to overcome in a game of survival of the fittest and it is constant for all times. Libraries should adopt a structured, practical change management process that reinforces change. This could involve giving a reward for hard work (Ohene-Danso, 2015).

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