

Innovation Culture as a Driver of a Firm's Innovation Excellence: Evidence from Apple and Huawei

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ABSTRACT

Innovation culture is a pivotal driver of a firm's innovation excellence. This inspires employees to think and do the unthinkable. In that context, this case study uses Apple and Huawei as examples to analyse how innovation culture drives innovation excellence in firms. In such analysis, critical content analysis was integrated with unstructured interviews with product managers from Apple-Glasgow Stores in Scotland and Huawei's Authorised Stores in Dubai-United Arab Emirates. The study aimed to extract critical information on Apple and Huawei's innovation behaviours, culture and practices as well as their competition enhancing effects. Outcomes of such analysis were triangulated with the results of systematic review of core theories and literature on innovation culture creation and its leveraging effects on a firm's performance. Findings revealed innovation culture to unlock employees' overall improved creativity to think and do the unimaginable. This creates higher product, process, position and paradigm differentiations to leverage a firm's overall competitiveness. Huawei's innovation culture catalyses the embracement of higher level of employee creativity and innovativeness across different business functions as a daily business practice and way of life that defines how each and every activity is accomplished. This was found to drive improved quality, cost minimisation and creation of process efficiency advantages that are passed to customers through lower prices to bolster Huawei's overall process and position competitiveness. Likewise Apple's entrenched innovation practices and behaviours were found to create higher premium values that customers are willing to acquire even if the products are of significantly higher premium prices. Combined with Apple's higher commitment to quality excellence as an innovation culture that delights employees to think and do the unthinkable, this was found to bolster Apple's competitive edge to fetch higher returns as a leader in the global premium telecommunication and consumer electronics segment. Despite its competitive edge, Apple still faces challenges of lowering prices to fill gaps in the lower-income segments that Huawei and Samsung are using as the attack base, inspite suffering from the phenomenon of 'Made in China are Cheap'. From these findings, the paper extracted an innovative culture development model that can be emulated by the emerging innovation ventures.

Keywords: Apple, firm's competitiveness, firm's performance, global telecommunication and consumer electronics' segment, Huawei, incremental innovation, innovation culture, innovation excellence, radical innovation

Cite this article as: Okanga, B. (2023). Innovation Culture as a Driver of a Firm's Innovation Excellence: Evidence from Apple and Huawei. *Future of Business Administration*, 2(2), 26-53.
<https://doi.org/10.33422/fba.v2i2.534>

1. Introduction

Innovative culture is a pivotal driver of a firm's innovation excellence. It leverages high level of employee creativity, motivation and commitment to think and do the unthinkable. This bolsters the overall success of an enterprise's innovation activities. Such reasoning echoes Tidd and Bessant's (2021) definition that as innovation is the seamless conversion of ideas into the desired strategic value creating outcomes, innovative organisational culture is a set of shared creative vision, behaviours, practices, feelings, attitudes and climate that eases innovation ideas' translation into the desired value offerings. As a firm stipulates its corporate

innovation vision and invests in the required innovation resources and technologies, it is the innovative organisational culture that shapes employees' behaviours and practices to drive the seamless innovation ideas' conversion into the desired differential value creating outcomes (Liu, Chow, Zhang & Huang, 2019).

Innovative organisational culture catalyses employees' creative behaviours to smoothen the innovation process by generating and selecting an array of the best innovation ideas that inform the best products that can be created (Hurt & Dye, 2020). It is through such outcomes that innovative organisational culture leverages innovation excellence to bolster a firm's competitive edge and sustainable superior market performance.

Creating and cultivating such desired innovative organisational culture require a high level of top management commitment to set shared corporate innovation vision and expected standards of creative behaviours and practices. It also requires recognition and reward for creativity, innovative climate and leaders' exhibition of high creativity and innovative behaviours that ordinary employees can easily emulate (Liu et al., 2019).

Unfortunately, despite innovation culture being a critical driver of business excellence, most businesses still exhibit certain incompatible executive behaviours in which the executives spend less on R&D. This affects the availability of the required innovation resources and technologies for employees to immensely engage in the required innovation activities (Hooge, Bejean&Arnoux, 2016). Yet, as some of the enterprises have their innovative culture vision just on paper without practical implementation, other impediments often arise from stringent managerial controls that limit creativity, employee empowerment, involvement and motivation.

Such stringent managerial controls have also instigated stronger path dependencies that have not yet been modified to support most of the enterprises' employee creativity and innovation endeavours (Rasoava, Rampursad&Nitskie, 2020). However, it is not just such enterprise innovative culture barriers that motivate this research, but also the limited research that have been conducted on the approaches for creating and cultivating an enterprise's innovative culture.

Most studies are more fascinated with the general economic impacts and values of innovations on the economy and the impact of the larger conventional corporate culture on a firm's performance (Ritala, Vanhala & Jarvelainen, 2020; Klarin, 2019). In such studies, only little has been done to explore the impact of innovative culture on a business' innovative capabilities and performance as well as how to create and cultivate such innovative organisational culture.

Yet as theories and empirical facts from Apple and Huawei indicate, it is implicitly evident that a focused innovative culture can significantly leverage successful innovations to bolster a firm's overall operational excellence and competitiveness (Harshanki, 2021; Apple, 2021; Miles, 2021; Chen, 2019; Meaghan, 2019; Tao, 2018).

With Apple and Huawei exhibiting some of the best innovation cultures, it is a nexus of such facts that motivate this seminal paper to offer a critical analysis of Apple and Huawei's innovation behaviours, culture and practices. Through such analysis, the paper aims to extract the best innovation culture development practices and behaviours that can be emulated by the emerging modern innovation ventures.

1.1. Apple

Apple is a multinational operator in the consumer electronics and software markets. Due to its high level of innovativeness, Apple ignited the revolution in the consumer electronics segment through the introduction of its revolutionary products like Apple 1 and 11, Macintosh and later iPod, iPhone and iPad (Forbes, 2018). It was established in 1976 by Steve Jobs and Steve Wozniak after a long struggle with computer innovation and development (Kubilaya, 2015).

Headquartered in Cupertino, California-US, Apple first engaged in radical and incremental innovations in the 1970s to introduce its Apple 1 that had no monitor, keyboard and casing. Apple 1 was subsequently modified with colour graphics Apple 11 that revolutionised and redefined the computer industry as well as human-computer relation forever (Kubilaya, 2015).

By 1980 Apple had scooped a fortune of \$117 million, but Wozniak still left in 1983 to relieve himself of the daily hurdles of managing the business, as Steve Jobs exited in 1985 to establish NeXT Software as his own new innovation venture.

Though Apple was able to survive and even perform well after the exit of its co-founders, it was not until the 1990s that it started to experience shrinking profitability and market-share. This prompted the re-engagement of Jobs and acquisition of NeXT Software to have Jobs as the new CEO. Jobs as the new CEO later turned out as a pivotal venture champion that significantly influenced Apple's evolution and revolution in the computer and consumer electronics industry upto date.

Through Jobs' visionary and transformational leadership as a venture champion, Apple adopted a culture of radical and incremental continuous innovation. Through such approach, it continuously created and churned out a series of disruptive innovations like inter alia iPod/iTunes, iBook, iPhone, iCloud, wireless networking systems, Mac OS X and iOS (Harshanki, 2021).

By 2021, Apple had a net turnover of \$365.85 with a \$2 trillion market capitalization (Apple, 2021), but still its major rivals like IBM and Microsoft, Google, Hewlett-Packard, Dell, Lenovo, Amazon, Sumsang and now the new entrant Huawei that now promises to overtake Apple are not leaving Apple alone (Miles, 2021).

1.2. Huawei

Huawei which was established by RenZhengfei in 1987 as a sales agent for Hong-Kong based phone and cable network has grown into one of the global giants in the telecommunication and consumer electronics segment. Through aggressive innovative culture, Huawei has engaged in innovations that have disrupted telecommunication hardware and network segments as well as consumer electronics and smartphone manufacturers to generate a turnover of \$136 billion and \$8.4 billion market capitalisation by 2021 (Huawei, 2021; Tao & Chunbo, 2014).

Headquartered in Shenzhen-China and capitalising on the increasing demand for complex and efficient communication networks in the constantly expanding Chinese cities, Huawei has grown to not only serve the Chinese electronics market, but also to rival the likes of Apple, Samsung and Cisco in the entire global telecommunication networks and consumer electronics segments (Jackson, 2018; Lightreading, 2021; Martinroll, 2021).

As it promises and threatens to overtake Apple the leader in the global consumer electronics segment, some of the outcomes and results of its radical and incremental innovation culture

have been reflected in the consistent emergence of more efficient, cost-effective, reliable and fast microwave/wireless, Cloud X and 4/5G technologies (Chen, 2019; Meaghan, 2019; Tao, 2018).

With Huawei further increasing its R&D investments to emerge with superior telecommunication and electronic technologies as well as smartphones like the recent 2022 Huawei Mate 50 Series that threatens Apple and Samsung's products (Huang, Jaisingh & Xu, 2016; Fischer, 2021), analysis of Huawei and Apple's innovation culture as well as their innovation management approaches becomes of essence for discerning how they can succeed in outwitting each other.

Through such analysis, the study aims to compare Apple and Huawei's innovation culture with the core theories and literature on innovation culture creation to extract the innovative enterprise culture model that can be emulated by the emerging new innovation ventures.

2. Literature Review

The logic that innovative culture is a pivotal driver of a firm's innovation excellence is inherently echoed in most fundamental theories and literature on innovative organisational culture. Such reasoning is also supported in the literature and theories on creating and cultivating an innovative culture as well as the recent research findings on innovative culture as a driver of innovation excellence.

2.1. Innovative Organisational Culture

Innovative organisational culture connotes the shared innovation vision, beliefs, values, behaviours, practices, language, symbols, traits and way of life explaining how the organisation and its managers and employees accomplish the required different innovation activities to achieve the desired outcomes (Strobl, Matzler, Nketia & Veider, 2020). Such practices and behaviours are often reflected in innovation leadership, shared common vision, employee empowerment and involvement as well as employee autonomy, diversity and talent management. It also requires mutual respect among everyone to create an innovative culture that enhances collaborative operation.

Besides information exchange and sharing, innovation culture is also characterised by team spirit/work, creativity and continuous improvement quests among all the employees (Rossman & Euchner, 2018). Other behaviours include flexibility, employee self-drivenness, consistent commitment to quality excellence, seamless management-employee interaction, recognition and reward of innovative behaviours, and results driven approach adopted by all the employees (Moor, 2021).

Innovative organisational culture is also often exhibited in the individual employee's behaviours as an expert promoter as well as the information hub and power promoter with high level of autonomous decision-making authority. Individual behaviours may also display individual employees as process promoters that collaborate all activities, relationship promoter that links with everyone and teams, and an enthusiastic innovation champion that puts in all the individual efforts to ensure the innovation is a success as part of the collective effort (Moor, 2021).

Innovative organisational culture reflects innovation team behaviours and practices that have clear objectives and defined tasks, effective team leadership and individual-team roles' balance. It also depicts mechanisms for agreeing and disagreeing without undermining the team and a system for aiding external liaison and collaboration (Bessant & Goller, 2017).

Through such attributes, innovation teams are able to operate as innovation coordinators in the organisation, team-workers, resource investigators, specialists, problem solvers, decision shapers, implementers as well as monitors and evaluators to achieve the desired innovation outcomes. Innovative culture is an organisational innovation DNA that drives its innovation capabilities (Tidd & Bessant, 2021).

Innovation culture often emerges as a critical asset/resource that determines the success or even the failure of the organisational innovation activities. Technological and capital financial resources play significant roles in the innovation processes. But it is the innovation culture that mediates how human capital seamlessly combines with technological and capital resources to convert new ideas into tangible and intangible realities.

As cited in Bo et al., (2023), innovative culture is part of the wider organisational culture that may spring from any of Hofstede's (1984) six "Cultural Dimensions" that include power distance, uncertainty, individualism, femininity/masculinity, time perspective and restraint/indulgence. Power distance reflects the closeness of power that can get power shared across the organisation's social structure or greater distance that can alienate employees and cause inequities which are still nevertheless accepted as the norm. Uncertainty exhibits risk intolerance, relativistic and opportunistic culture. Individualism is driven by individual goals, needs and values that may conflict with communal goals, needs and values (McCausland & McCausland, 2022).

Femininity/Masculinity reflects competitive, expeditious, focused and assertive masculine attitudes or friendly, collaborative and cooperative feministic attitudes. Time perspective indicates long-term oriented culture that pragmatically works towards achievement of future rewards, or short-term oriented cultures reflecting pride, tradition and achievement of social norms (McCausland & McCausland, 2022). Restraint/indulgence indicates whether the organisational culture permits free satisfaction of the basic human impulses of passion to life or regulates its satisfaction through norms that restrict certain behaviours.

Besides Hofstede's (1984) "Cultural Dimensions", Tidd and Bessant (2021) also reiterate the modern notion of innovative organisational culture to be drawn from Schein's (2004) "Multi-Layered Organisational Culture Model". Schein highlights organisational culture to have three layers that include artifacts, values and assumptions. Artifacts reflect visible cultural elements like spatial distribution, business processes that define routines, language, expression, behaviours, style and clothing.

Values are employees' shared experience which is confirmed and accepted throughout the organisation to define daily way of life and operations. Assumptions are the unconsciously taken forgranted underlying perceptions and beliefs that are implicit in the way employees think, act, feel, interpret and interact with each other and the required organisational activities. For innovative culture, Cameron and Quinn's (1983) clan, adhocracy and market culture as contrasted to hierarchy culture offered important foundational insights on what would or would not constitute a good innovative organisational culture.

But in their later "Competing Value Model (CVM)", Cameron, Quinn, Degraff and Lakor (2006) as cited in Zhang et al., (2023), reveal cultural dimensions and competing values map that explain the nature and type of an organisation's culture. Cultural dimensions constitute of four axis with internal/external axis reflecting whether the organisation focuses more on its customers and partners or on its organisational agents and processes (Kim, Cameron & Quinn, 2011). Flexibility/stability axis analyses whether the organisation uses top-down or bottom-up organisational decision-making approaches. Speed of change axis describes

whether the organisation undertakes long-term or fast speed of change. Degree of change axis examines whether the change is incremental or transformational.

Cameron et al., (2006) as cited in Zhang et al., (2023), posit these four axis to interact and represent four types of organisational culture that include clan, adhocracy, market and hierarchy culture. However, theories imply creating and cultivating an innovative organisational culture that leverages an enterprise's innovative capabilities does not only require identification of organisational culture type, but also the application of certain processes and key components (Bessant & Goller, 2017; Muafi, Siswanti, Kostrad & Salsabil, 2020).

2.2. Creating and Cultivating an Innovative Organisational Culture

Creating an innovative organisational culture requires the establishment of effective innovation leadership. It is innovation leadership that sets the examples of good innovation behaviours, practices and values to influence the emergence of innovation culture across the organisational structures (Flor, Cooper & Oltra, 2018). Innovation leaders often set innovation vision and influence employees at all levels to change and embrace changes and best practices that are critical for bolstering an enterprise's innovative capabilities (Strobl et al., 2020).

It is the innovation leaders that often emerge as venture champions to influence resource mobilisation through equity financing, venture capital, stock market listings, loan and grants to finance the conversion of new innovation ideas into tangible and intangible realities. This aids innovation ideas' conversion into final products/services.

Innovation leaders also often turn out to be important public figures and celebrities like the likes of Tesla's Elon Musk, Facebook's Mark Zuckerberg and Amazon's Jeff Bezos to attract market attention and influence ease of new products' promotion and diffusion across the market (Hooge, Bejean & Arnoux, 2016).

However, innovation leaders are solely unable to influence the emergence of innovation culture across the organisation, unless the innovation culture is also cascaded across all the divisional, departmental and unit managers. It also requires the empowerment of every employee to become a leader in his or her right when accomplishing the designated tasks (Jean, Chiou & Sinkovics, 2016). This creates a holistic innovative organisational culture that permits the emergence of good innovation practices and behaviours like creativity and employee autonomy and control to operate within the prescribed specifications.

As leaders and managers seek to influence the emergence of a good innovative organisational culture, they must also be able to consistently exhibit critical innovation leadership traits like intelligent, bright, alert and experts of their areas of operations. They should also exhibit responsibility for all activities, experience in their domain, administrative and social competence, energetic, active, resilient and good communication competencies (Ritala, Vanhala & Jarvelainen, 2020).

Besides encouraging an innovative climate and diverse teams that attract top talents, Tidd and Bessant (2021) highlight the critical components of an innovative organisational culture that influence the evolution of an innovative entity to include shared vision, leadership and employees' will and motivation to innovate.

Other components are suitable structure that supports creativity, employee autonomy, learning and relearning through trial and errors as well as development of key individual

employees as innovation champions. It also requires the development of promoters and gatekeepers that exhibit good innovation practices and behaviours.

Creating and cultivating an innovative organisational culture require usage of teams that encourage diversity of talents and cross-functional collaboration to aid creative problem solving (Kennedy, Whiteman & van den Ende, 2017). Such components further include high employee involvement in innovation to support continuous improvement as an organisational-wide culture and creativity climate that supports and rewards emergence of new ideas as well as idea implementation.

Innovation framework must also reflect internal/external focus that aids seamless collaboration with customers, partners and even competitors in the quests to engage in open innovation (Klarin, 2019). Building and nurturing innovation culture also requires the adoption of the appropriate innovative structural archetype.

As cited in Manly et al., (2023), Mintzberg's (1979) "Structural Archetypes" indicate such archetypes to include simple structure that though is centrally controlled, is still more responsive to the changes in the innovation external ecosystem, and machine bureaucracy structure which is centrally controlled by systems and innovation subject specialists (Tidd & Bessant, 2021). Other archetypes are divisionalised systems reflecting decentralised and semi-independent units that are adaptive to the local environmental challenges. It also includes adhocracy archetype designed along innovation teams to deal with risks of instability and complexity, as well as mission oriented archetype held together by a shared vision (Kraus et al., 2023).

In line with Chandler's (1962) notion of structure follows strateg, this implies the adopted archetype influences the creation of a suitable culture that supports the manufacturing enterprise's innovation strategy. However, Wagguh's (2017) "Creating an Innovation Culture Model" implies as businesses embrace different technologies in their innovation processes, the creation of a culture that encourages the utilisation of such technologies is also critical for innovation success. Such a culture must also support knowledge generation, acquisition, assimilation and management to bolster innovation success in the modern knowledge-driven economy (Bremen, 2023).

In such a process, Wagguh introduces six concepts for cultivating an innovation culture to encompass practicing "innovation parenting", hierarchy busting, encouraging the unreasonable, limiting extensive innovation, cultivating business relationships, and faster hiring of the best talents.

Practicing "innovation parenting" requires innovation leaders to create parameters and degree of collaboration between such parameters. Such parameters must be collectively managed by leader-managers and employees that have significant degree of discretion to emerge with new ideas that are not subjected to stringent executive and budgetary controls (Kennedy, Whiteman & van den Ende, 2017).

Once managers in such parameters achieve the desired results with only limited executives' intervention, they will be motivated to work more independently to achieve even more for the organisation. As this entrenches a culture of innovation, it must also be accompanied with a practice that aids the collaboration of such parameters with the external system to aid new knowledge acquisition and utilisation in new value creation. Hierarchy busting requires elimination of innovation barriers by getting rid of stringent management controls and introducing new innovation practices (Wagguh, 2017).

Such practices can support risk taking, limited management intervention, employee empowerment, informal and formal management-employee interactions and reward system to

minimise low motivation that often reduces employee creativity and innovation energy (Hurt & Dye, 2020). Encouraging the unreasonable requires the motivation of employees to defy the existing conventional thinking and think outside the box to emerge with ideas that may seem unconventional, but still commercially and technologically quite attractive to create the desired values for the enterprise (Chen, 2023).

As it is through such a culture that enterprises can be able to emerge with unique disruptive innovations, Wagguh (2017) suggests that extensive innovations in a range of different areas must also be avoided as it can overstretch the limited resources to distort the organisation's innovation focus. This implies innovation must be focused on just certain areas in order to cultivate a culture that instigates emergence of innovation excellence. These must be accompanied with cultivating business relationship culture to support cross-functional collaborations and interactions with external partners to support open and collaborative innovation efforts (Pisano, 2019).

Finally, fast hiring the best talents require the recruitment and retention of highly talented employees that Steve Jobs, Apple's former CEO said must be able to tell the executives what to do and not the executives to tell them what to do. As these bolster a culture of information exchange and sharing, different theories also aver that cultivating an effective innovative organisational culture spurs a firm's innovative capabilities to bolster its innovation excellence (Pisano, 2019; Scott, Cobban, Painchaud & Parker, 2020; Moor, 2021).

2.3. Innovative Culture as a Driver of Innovation Excellence

Innovative culture leverages innovation excellence to bolster a business' sustainable performance. Once lower level managers and employees understand that their innovative behaviours are recognised and accepted by top management, it becomes easier for them to engage in corporate intrapreneurship (Zaharee, Buen, Chandra, Krautkramer, Mehlman, Schall & Taylor, 2021). Employees become more motivated to engage in high level of creativity to influence the effectiveness of corporate intrapreneurship.

High level of corporate intrapreneurship bolsters the generation of an array of different business ideas that can influence the array of new products that the business creates and churns out to the market. This enriches a business' portfolio of products to spur increment in sales, revenue and profitability (Scott, Cobban, Painchaud & Parker, 2020). This spawns a firm's overall financial bottom-line and enrichment of shareholders' value.

Innovative culture also spawns improvement of the employees' creativity that not only introduces new insights on the quality, attributes and features of new products that must be created, but also new business processes, position and paradigms that positively change the existing business models. Such a view is consonant with Tidd and Bessant's (2021) reasoning that innovation can take the form of product, process, position and paradigm innovations. However, Muafi, Siswanti, Kostrad and Salsabil (2020) caution that to achieve such positive innovation outcomes, the creation of an innovative culture must not only focus on leveraging internal innovation culture, but also the innovation culture in the partner organisations.

In such a process, innovation culture must be encouraged and created in all the partner organisations' value chain systems. Innovation culture in supplier organisations may require putting certain terms and conditions during procurement to ensure suppliers also engage in the required level of creativity to supply inputs that enable a business create the desired new values (Hurt & Dye, 2020).

Alternatively supplier organisations can pull together the resources for training to introduce new thinking and practices that can support the emergence of innovation culture. This may

also require the careful selection of suppliers and partners to ensure that their culture is also innovatively compatible before concluding any deal (Jesling, 2019). Such level of innovation culture compatibility is also required in the partner distributor organisations that operate in the business' value chain system to deliver the required finished products to final consumers.

Though some innovation culture incompatibilities may arise, all these may still bolster a business' product, process, position and paradigm innovations to catalyse its competitiveness on the basis of cost, differentiation and focus (Moor, 2021). Such thinking is consonant with Pisano's (2019) reasoning that innovative culture catalyses a firm's operational excellence. As innovation culture encourages the creation of a more attractive environment and climate in which creativity is encouraged and rewarded, employees tend to become more motivated and creative.

High employee motivation implies they are most likely to go an extra-mile to discern the best ways through which different business activities must be accomplished. Such excessive efforts can instigate the emergence of the best cost management approaches, quality excellence as defects reduce and better customer satisfaction as the quality of customer services improves. Innovation culture does not only impact positively on a firm's innovation activities, but also on the other ancillary business activities to bolster a business' overall improved operational excellence.

But Jesling (2019) argues that achievement of the desired level of operational excellence also requires the development of innovative culture efforts that seamlessly integrate with the increasingly used EFQM model (European Foundation for Quality Management). EFQM model enables a business to holistically diagnose its operational performance in the context of the usually more complex ecosystem to discern how to create, deliver and capture the best values or results (Santos-Vijande & Alvarez-Gonzalez, 2007).

EFQM model enables the organisation re-evaluate the reasons and purpose of its existence as well as how its existing strategies are aiding the achievement of such vision and mission (European Foundation for Quality Management, 2021). To leverage strategy re-alignment, EFQM model diagnoses a business' direction, strategy execution and results attained using certain seven criteria for holistic evaluation of an organisational performance. Using such criteria, a business' direction is evaluated using two criteria; a business' purpose, vision and strategy as well as its organisational culture and leadership effectiveness. Effectiveness of strategy execution is diagnosed by examining three criteria that include stakeholder engagement, sustainable value creation and driving performance and transformation (Govindan, Khodaverdi & Jafarian, 2013).

Results' dimension that analyses whether the outcomes of strategy execution are responding to a business' overall purpose and vision is diagnosed using two criteria of stakeholder perceptions and a business' overall strategic and operational performance. To identify opportunities and areas for improvement, EFQM model's application is also often integrated with RADAR (Results, Approach, Deployment, Assessment & Refine) diagnostic tool (European Foundation for Quality Management, 2021).

Yet, as this leverages an organisational innovative culture, Yohn (2021) also highlights innovation culture to aid team work, team spirit, shared vision, and internal/external collaboration that bolsters information exchange and sharing. This enables a business understand the trends in its ecosystem to emerge with products that outwit unfolding disruptive changes. It is through such positive outcomes that innovative culture spawns a business' sustainable performance.

However, McCausland (2022) still highlights that most barriers of innovation culture creation as a driver of a business' sustainable performance have often still emerged from practices that limit creativity for fear of granting lower managers and ordinary employees higher degree of autonomy. This often mutates with stringent financial controls that limit usage of experimental resources to engage in trials and error as a strategy for learning and relearning in any effective innovative organisational culture.

Besides poor employee empowerment and supportive organisational structure and human resource policies, innovation culture creation is also hindered by poor innovation culture in partner organisations that affect the commitment of the business to use innovation culture to create and deliver the desired values (Rossman&Euchner, 2018). It is in that context that this research uses the methodology described below to diagnose Apple and Huawei's innovation culture, behaviours and practices so as to extract the innovative enterprise culture model that can be emulated to drive emerging new innovation ventures' innovation excellence.

3. Methodology

To achieve its objective, the methodology used in the study entailed usage of qualitative-critical-content analysis and interviews (Leavy, 2017) to evaluate the innovation management behaviours and practices that explain the culture of innovation excellence that drives Apple and Huawei's innovation successes.

3.1. Content Analysis

Critical content analysis was structured according to three-main phases with the first phase examining the innovation best practices and culture associated with Apple and Huawei's product, process, position and paradigm innovations. This was accompanied with the evaluation of the potential key success factors and limitations of innovation culture development.

Second phase of content analysis examined innovation best practices and behaviours associated with Apple and Huawei's management of innovation process of search, select, implement and capture of the values of their different innovation ideas/products. Thirdly, content analysis undertook a comparative analysis of how such innovation practices and behaviours leverage or constrain Apple and Huawei's competitiveness and performance as well as the limitations to innovation culture evolution that each of them faces.

During such analysis, critical content analysis in the first instance undertook a systematic review of critical core theories and literature on innovative organisational culture, creating and cultivating an innovative culture, and innovative culture as a driver of innovation excellence. With theoretical perspectives obtained, the study evaluated Apple and Huawei's innovation management practices and behaviours as extracted from the information on their websites, Annual Reports, valuable online grey literature, conducted previous academic studies (Journal Articles), books on Apple and Huawei's innovation successes and areas of failures.

The generated information were thematically analysed using Tidd and Bessants' (2021) Innovation 4Ps and Innovation Management Process of Search, Select, Implement and Capture. Using the 4Ps (Product, Process, Position & Paradigm Innovations), analysis of the generated texts was undertaken to extract and arrange themes and their accompanying texts according to key themes encompassing product, process, position and paradigm innovations.

This was followed by a critical evaluation of how the activities and processes accomplished under each of the four themes have emerged to define the Apple and Huawei's innovation culture of how it does its things to gain undisrupted competitive edge over their rivals.

After completing such analysis, the next phase of thematic analysis extracted and arranged subthemes and their accompanying narratives according to the innovation management process of search, select, implement and capture. This was also followed by the analysis of how such activities have turned into the critical innovation behaviours and practices that define Apple and Huawei's innovation culture that bolsters their overall operational excellence and competitiveness.

To confirm validity and reliability of the gathered information (Fox & Alldred, 2018), such analysis was accompanied with brief unstructured interviews with product managers in Apple-Glasgow Stores in Scotland and Huawei's Authorised Stores in Dubai-United Arab Emirates.

3.2. Interviews

Interviews entailed having brief conversations with the Apple and Huawei's product managers as well as sales and marketing managers about the key innovation behaviours and practices associated with their product development that they perceive to have turned into part of the Apple or Huawei's innovation culture.

The managers' opinions were also sought to discern how such innovative behaviours and culture have been critical for driving Apple and Huawei's innovation excellence, competitiveness and market performance. The participants were also each required to point out some of the challenges of innovation culture development as well as how such weaknesses have been overcome.

The obtained interview data was thematically analysed by evaluating and extracting common themes and their accompanying narratives reflecting how Apple and Huawei accomplish activities like product, process, position and paradigm innovations as part of their innovation culture. This was accompanied by analysis of how Apple and Huawei accomplish activities like search, select, implement and capture as part of their innovation culture. The emerging interview findings were triangulated and merged with the outcomes of content analysis.

With outcomes of such unstructured interviews corroborating and confirming or disputing certain information, the overall outcomes of the analysis of Apple and Huawei's innovation management practices and behaviours were contrasted and triangulated with the core theories and literature on innovative culture as a driver of innovation excellence.

While also enhancing credibility and trustworthiness of the study by upholding the overall dependability, transferability and conformability of the research findings as well as ethical considerations (Fullagar, 2017), below are the analysis and presentation of the details of the findings.

4. Findings

To respond to the research aim and objective which is to extract the best innovation culture and practices that can be emulated by the emerging innovation ventures, the findings are presented according to four subsections encompassing:

- Apple's Integrated Product, Process, Position and Paradigm Innovation Behaviours, Culture and Practices.

- Apple's Innovation Behaviours and Practices of Search, Select, Implement and Capture
- Huawei's Integrated Product, Process, Position and Paradigm Innovation Behaviours, Culture and Practices
- Huawei's Innovation Behaviours and Practices of Search, Select, Implement and Capture

Details are as follows.

4.1. Apple's Integrated Product, Process, Position and Paradigm Innovation Behaviours, Culture and Practices

Findings revealed Apple to have adopted the innovation culture that encourages stringent adherence to the "4Ps (Product, Process, Position & Paradigm) of Innovations" to engage in radical and incremental product, process, position and paradigm innovations.

4.1.1. Product

Product innovation may entail the improvement of the features, attributes, functionality and quality of the existing products/services or the development of completely new and different products/services that offer better values (Abernathy & Utterback, 1975). Contrasted to some businesses that just engage in minor incremental product innovations, Apple has adopted a more radical product innovation culture that led to the introduction of Apple 1 and incremental innovation culture leading to the development of Apple 11 where monitor, keyboard and casing that were lacking in Apple 1 were included (Harshanki, 2021).

Such stronger radical and incremental innovation culture are accompanied with the embracement of continuous innovation culture. This is reflected in the fact that though Apple 11 with colour graphics revolutionised the computer industry, further incremental innovations led to the introduction of Macintosh computers and subsequent radical innovations led to the emergence of touch-screen iPhones and computers (Kubilaya, 2015).

Further continuous innovation introduced other radical product innovations like iPod/iTunes, iBook, iCloud, wireless networking systems, Mac OS X and iOS. Yet, as Apple embraces such radical and innovation product innovation culture to redefine the global computer and consumer electronics industry to its advantage, Apple's stringent innovation culture does not only encourage product innovation, but also continuous process innovation to bolster its operational efficiency and competitiveness (Lashinsky, 2012).

4.1.2. Process

Apple's continuous process innovation culture emphasises continuous improvement to unlock new process efficiency advantages that can bolster its competitiveness. Process innovation is improvement of the efficiency of the existing operational and manufacturing processes or the introduction of completely new and better ones (Zawislak, Cherubini, Tello-Gamarra, Barbieux & Reichert, 2012). Apple's innovation culture implies as it seeks to innovate and develop superior product/service offerings, it has also been introducing more radical and incremental operational and manufacturing processes (Sotirios, Loizos & Angwin, 2015).

In terms of its structural operations, Apple uses fluid flexible management structure modelled a long a single one functional organisational structure rather than discrete functional units. It believes that if the entire organisation operates as one big team, it can aid seamless collaboration between expert managers and not management experts across different product

innovation and design platforms (Lashinsky, 2012). Apple also religiously adheres to eight iterative product development processes that include:

- Design as a pivotal activity for anticipating and responding to customer tastes and preferences,
- Design team separation from the bigger organisation to permit concentration and avoidance of external interference,
- Attention to details and product development process documentation for further review,
- Periodic review and modifications of all product development projects,
- Submission of product design to Engineering Program Manager and Global Supply Manager to liaise and collaborate with outsourced companies for manufacturing and production,
- Iterative product review even after market introduction,
- Preservation of the sanctity of packaging house to avoid contamination and secret leakage, and
- Market launch and further periodic review to improve and improve its products in a way that exceed its global customers' expectations (Lashinsky, 2012).

As this demanding, complex and expensive process innovation culture and practices explain Apple's capabilities to churn out a series of successful innovations, Apple also uses stringent position innovation culture as its rivals scamper unsuccessfully to learn, imitate and replicate its product development processes (Podolny & Hansen, 2020).

4.1.3. Position

Position innovation is how a business understands the market to define itself through its product/service offerings to be viewed in a particular way not only by the segments that it targets, but also by its rivals (Panmore, 2018). Apple's innovation culture strongly emphasises the importance of significantly distinguishing its brands from those of rivals in all ways possible. In such a culture, it has radically positioned itself to be viewed by the electronics consumers and its competitors as an innovation leader in the electronic communication hardware and software which is able to accurately anticipate and respond to its consumers' needs even if such needs are not raised by customers or competitors (Verganti, 2009).

Among its competitors, Apple has positioned itself as the innovation leader and not the follower who is able to invest enormously in R&D to continuously churn out a series of disruptive product innovative products. As this scares away some of the competitors, it has also reduced some of its rivals into mere followers and imitators of its products.

To accomplish that, Apple has adopted an innovation culture in all angles of its operations to ensure that its employees and partners are able to contribute to its quests to continuously churn out superior disruptive products to respond to its vision statement of making the world better by introducing exceedingly smart and intuitive products that change people's lives for the better (Greenspan, 2019). Yet, as such position innovation culture positions Apple differently in the eyes of its customers as well as competitors, Apple has also adopted a more radical and incremental paradigm innovation culture.

4.1.4. Paradigm

As part of its innovation culture, Apple continuously shapes and reshapes its business philosophy, thinking and models to realign its operation with the unfolding ecosystem trends

and reposition itself differently in the global consumer electronics segment (Kubilaya, 2015). Such approach echoes the notion that paradigm innovation is the creation of a business model that supports not only the business innovation endeavours, but also creates and captures values in a way that competitors cannot easily replicate (Sotirios et al., 2015).

In a bid to create and capture the desired values from its innovations, Apple's innovation culture signifies continuous engagement in radical and incremental paradigm innovation to create and capture values from its innovation in a way that its rivals cannot easily imitate. Apple has a business model hinged on the philosophy that its sustainability depends on understanding and responding to customer needs (Podolny & Hansen, 2020).

In this quest, it also has the business philosophy that customers must not be waited to express their needs, but instead Apple must anticipate and respond to what customers are thinking and imagining now and into the future to emerge with innovations that can respond or even surpass such needs.

Through such approach, Apple has adopted a largely blue ocean innovation philosophy that focuses on going into the markets or creating new needs that were previously unanticipated by customers and rivals (Panmore, 2018; Kim & Mauborgne, 2005). Within such business thinking, Apple has adopted more dynamic business model that encourages flexibility and creativity to remain absorptive and adaptive to the constantly changing business environment.

Apple's innovative business model not only subscribes to a single functional organisational structure that avoids the commonly used structures where organisations are divided according to discrete business units (Podolny & Hansen, 2020). Instead it encourages the growth of scientific product specialists and experts up the management ladders as contrasted to the commonly used business management and strategy experts. Combined with what Apple calls discretionary leadership model, this has enabled Apple have experts with details of product development managing and guiding fellow experts (Podolny & Hansen, 2020).

Apple's paradigm innovation culture also involves enormous investment in R&D and accumulation of the desired intellectual capital through recruitment and nurturing of talented employees to support its continuous innovation to continuously churn out new products as a way of disrupting competitors (Forbes, 2018). This renders competitors unable to counter and disruptive Apple's progress. Yet, as Apple engages in such radical and incremental product, process, position and paradigm innovation culture, behaviours and practices, it also tends to us a combination of different approaches, practices and strategies for managing its innovations.

4.2. Apple's Innovation Behaviours and Practices of Search, Select, Implement and Capture

As part of its innovation culture, Apple stringently adheres to the innovation process analogous to Tidd and Bessant's (2021) innovation management process of search, select, implement and capture:

4.2.1. Search

Apple has adopted the open innovation culture of continuously searching and scanning its ecosystem trends for the potential changes that offer new insights on the new products that must be developed or on how the existing products must be improved (Reichwald, Huff & Moeslein, 2013). Search is the evaluation of the existing market and industry trends to extract ideas from the prevailing customers and competitors' behaviours as well as the direction that such behaviours are most likely to take in the future. Such search process is

evident in Apple's behaviours that focus on thoroughly analysing the existing customers' behaviours (Lashinsky, 2012).

In such a process, Apple was able to identify that the existing sophisticated contemporary customers like ease of doing work and convenience of communication and information sharing in the way they do everything due to the pressure to survive in the modern societies. As such approach generated innovation ideas that gave birth to Apple 1 and II that were largely used for capturing and storing accounts data, it also subsequently generated ideas that gave birth to smartphones integrated with internet, cameras and other app services to ease the overall process of communication and information sharing and exchange (Kubilaya, 2015).

However, from its culture of continuous analysis, Apple does not only rely on environmental scanning to identify new trends that can influence innovation ideas, but also on intense product analysis to imagine what the customer would want added, deleted or improved on such a product. Such approach is evident in the emergence of touchscreen smartphones that emerged not from insights offered by customers, but just from Apple's imagination of what the customer would prefer (Sotirios et al., 2015). To accomplish that, Apple emphasises the need for high level of creativity, in-depth and detailed product knowledge among product experts and stronger R&D autonomy and independence to engage in such imaginations with limited disruptions.

Besides that, Apple also relies on understanding their competitors' behaviours as well as on anthropological and archaeological data to evaluate and understand past human experience and values (Harshanki, 2021). This explains the emergence of Apple's wireless technology ideas that existed in 1888 for radio airwave and microwave communication. Nonetheless, with an array of ideas generated, further analysis revealed Apple to also engage in some form of selection innovation culture.

4.2.2. Select

Apple has the innovation culture where idea selection is subjected to routine criteria and practices to ensure the selection of the best innovation ideas. In general, select is the analysis of the generated list of ideas against the designated criteria to choose the idea that would create and capture the desired values in the context of the given resources and technology (Podolny & Hansen, 2020).

Even though Apple generates and unleashes a series of innovations to suggest as if they convert every idea into new product innovations, its CEO Tim Cook still reveals that Apple also tends to limit ideas that pass for actual product development to avoid overstretching its resources.

In such a process, Apple tends to evaluate the practicability and revolutionary nature of ideas, feasibility in terms of market trends, resources and technology as well as the sustainability of the ideas (Panmore, 2018). It also generates prototypes of their ideas that are subjected to thorough analysis by the internal R&D personnel as well as the potential future users of such products. This permits the selection of the best ideas for practical implementation and translation into new products, processes, positions or paradigms.

But even if that is the case, Apple's selection process has often not only suffocated the emergence of certain good innovations, but also caused the selection of certain innovation ideas that failed like AirPower wireless charger that was abandoned in 2019, and LISA (Local Integrated Software Architecture) that was over-engineered, complex, less user-friendly and costly to attract the market.

Apple TV was also abandoned because it was considered not revolutionary enough to disrupt Samsung's smart TV, as Apple Watch/Apple Pay failed to entice customers to replace credit and debit cards with it (Miles, 2021). Despite such failures, it is still evident that after engagement in search, Apple tends to adopt different strategies for the implementation of its different innovation ideas.

4.2.3. Implement

Implement is the conversion of the generated and selected innovation ideas into the actual goods and services that create the intended values for the enterprise. And for Apple, the process of implementing its innovation into realities entailed ensuring that it adopted the appropriate structure to support such initiative. Thus, Apple's structure that Steve Jobs introduced is still retained upto date with the effect that Apple is radically and differently structured according a single functional organisation and not discrete business units as it is the case with different big entities (Podolny & Hansen, 2020).

In such a single functional organisation, all critical product development processes are headed and managed by product experts who are engineers or scientists converted into business managers and not business management experts. This is because such experts are believed to have detailed product knowledge and expertise to use discretionary leadership to engage in collaborative debates with expert subordinates on what and how products should be technically created or ought to be (Forbes, 2018).

As this creates a suitable organisational and management structure as well as good climate for innovation ideas to be seamlessly translated into actual products, Apple also recruits and natures the most talented personnel that are supposed to engaged in the desired level of creativity to tell the organisation what to do and not the organisation to tell him/her what to do. Combined with the encouragement and reward of a culture of creativity, this has enabled Apple translate the innovation ideas according to the specification designated during search and selection as well as to create products that exceed customer expectations (Lashinsky, 2012).

In addition, Apple invests enormously in the usage of technologies as well as re-investment of a significant percentage of its profits in the translation of new innovation ideas into tangible products. It is a combination of such factors that has enabled Apple to implement and convert array of its innovation ideas into a series of electronic products that have so far revolutionised the overall global consumer electronics segment (Forbes, 2018; Harshanki, 2021). Yet, as Apple engages in such innovation implementation processes, it has also often sought ways of capturing as much values from its different innovations as possible.

4.2.4. Capture

Capture is the venture's utilisation of a combination of appropriate strategies to attract and acquire as much benefits as possible from its innovations (Denicolai, Ramirez & Tidd, 2014). To capture value from its innovations, Apple uses a combination of premium branding strategies modelled along its 4Ps of product, place, promotion and price to create a strong premium brand image. Thus, consumers tend to associate its products and services with premium value and quality to capture as much sales, market share and profitability as possible.

As Apple positions itself to capture enormous values from its customers, it offers an array of premium and high value electronics, information technology, internet services and digital content creation products and services (Datta, Ailawadi & van Heerde, 2017). It also uses its Apple Stores, websites and online platforms, authorised sellers and distributors and telecom

companies as a distribution strategy for rendering its products and services easily available and accessible by all customers (Greenspan, 2019).

Apple further uses intense marketing and advertising, personal selling, sales promotion and public relation strategies to create customer awareness and capture as much values as possible from its markets. Yet, as it uses such strategies, Apple also applies premium pricing to associate its higher prices with premium quality and high value products. These are accompanied with freemium pricing in which it offers some of its products and services for free only for customers to be required to pay if additional and better features are required (Rahmani, Emamisaheh&Yadegari, 2015).

Even if these capture strategies have enabled Apple acquire the desired values from its innovations, it still faces enormous competition from Samsung, Lenovo, Dell and Google that customers are increasingly realising to offer similar or even better quality products for quite lower prices (Jin & Yin, 2019). Apple's strategies of capture also ignore the larger lower-income electronics segments which Huawei is increasingly using as a gap to attack Apple.

4.3. Huawei's Integrated Product, Process, Position and Paradigm Innovation Behaviours, Culture and Practices

Huawei has adopted the innovation culture of investing enormously and consistently in R&D to unlock a set of radical and incremental product, process, position and paradigm innovations to grow and overtake its rivals in the global communication network and consumer electronic markets.

4.3.1. Product

For product innovations, Huawei uses radical and incremental innovation culture to create uniquely efficient and fast communication network hardware and software like LTE/EPC network and end-to-end 100G solution from routers to transformation systems that offer high quality ultra-broadband networks to revolutionise the overall efficiency and speed of electronic communication networks (Noyan, 2021).

Huawei's incremental product innovations also introduced U8220 and U82230 smartphones with Android-powered gadgets that competitively improved the quality of electronic communication among the global consumers.

Huawei also introduced more efficient, cost-effective, reliable and fast microwave/wireless, Cloud X and 4/5G technologies as part of its radical and incremental innovations to rival the likes of IBM/Microsoft and Cisco (Nikkei, 2019). However, to deliver high quality and value products for its customers, Huawei's innovation culture implies it does not only engage in radical and incremental product innovations, but also in more continuous radical and incremental process innovations.

4.3.2. Process

Huawei uses a uniquely low cost manufacturing process which is guided by the concept of "customer first" to create its products in a way that most of its rivals like Apple, Cisco, Lenovo, Dell and Google have failed to replicate (Ambashi, 2017). To accomplish this, Huawei emphasises continuous process efficiency improvement, process optimisation and R&D-geared process innovation to create its products at relatively lower costs that can be passed to the final consumers through lower prices.

Huawei not only stresses a culture of creativity, innovation, openness, internal competition, information sharing and collaboration in its manufacturing processes, but has also structured

its operational processes according to three business groups that include Carrier Network that develops wireless networks, Enterprise Business Group that manages information flow through the pipes and Consumer Business Group which is in charge of smartphone manufacturing (De Cremer & Tao, 2015).

Even though it is such functional business units that Apple distasted to adopt a single functional organisational system, such business units have still enabled Huawei to effectively manage and improve the efficiency of its more complex electronics production processes. To ensure that its employees are committed and dedicated to be creative and avoid mistakes during the production processes, Huawei also uses certain performance incentive and employee shareholding system to motivate and empower all its employees (De Cremer & Tao, 2015).

Yet as the employees become highly motivated, Huawei strongly emphasises the importance of gradual decision-making in its manufacturing processes to avoid the making of costly mistakes. Combined with a rotational CEO system, all these have enabled Huawei to consistently and competitively produce low cost and premium quality products. Yet, as Huawei engages in such process innovation practices, analysis of its innovation culture further revealed it to also engage in position innovation (Fischer, 2021).

4.3.3. Position

Through continuous radical and incremental position innovation culture, Huawei has positioned itself as a technologically-advanced low-cost problem-solver among the major telecommunication companies, large businesses and the small and medium scale businesses (Xiao, 2019). By providing consistently more efficient and cheaper telecommunication network technologies, the success and exponential growth of 4G and transition to 5G has also improved Huawei's reputation and branding to position itself as a provider of superior cheaper technologies that perfectly respond to the needs of the modern businesses as well as consumers in the electronics segment (Tao & Chunbo, 2014).

Combined with extension of that legacy to the production of more cheaper but premium quality and valuable smartphones, Huawei has further radically positioned itself as a business which is more responsive to the needs of the low income electronics consumer segment which was previously ignored by the likes of Apple, Nokia, Dell and Cisco.

Even if Huawei faces ban and reputational issues in the US, New Zealand and Japan due to its political connection to the Chinese government (Chen, 2019; Meaghan, 2019; Tao, 2018), such radical position innovation is also extending among the US and other consumers that are beginning to recognise Huawei's products as exceptional to the "Made in China" products that are often perceived as cheap and of poor quality.

As such radical position innovation continues to undermine Apple's market position; further analysis of Huawei's innovation culture also indicated engagement in some form of radical and incremental paradigm innovation.

4.3.4. Paradigm

Huawei's continuous radical and incremental paradigm innovation is reflected in the emergence of a radical business model which is driven by enormous and consistent R&D investments to create and deliver more advanced, efficient and affordable electronic telecommunication network technologies (Romans, 2020). To accomplish this, Huawei not only places customers at the heart of its innovative business model, but also continuously imagines to respond to the demands of the consumers that are ignored by its rivals.

This is reflected in its development of a business model that not only creates and delivers more efficient wireless/microwave network technologies to the businesses and consumers without laid cooper cable networks, but also in the delivering of cheaper premium value smartphones as well as the provision of 4/5G technologies that revolutionised the efficiency of telecommunication networks (Martinroll, 2021).

Huawei believes that creativity through enormous R&D investment, co-production and collaboration with partners like Google and maintenance of a dedicated sales team in the market are critical components of its business model to create, deliver and capture the desired values from its customers.

Even if some of the features of Huawei's business model are similar with Apple's, empirical facts still imply such learning, imitation and improvement is rendering it possible for Huawei to pose significant threats to Apple and Samsung's market positions (Lightreading, 2021). However, as Huawei uses continuous radical and incremental paradigm innovation culture, it was also found to use a set of certain innovation approaches and strategies to search, select, implement and capture the values of its innovations (Kimura, 2020).

4.4. Huawei's Innovation Behaviours and Practices of Search, Select, Implement and Capture

With no much difference with Apple's innovation management culture Huawei also tends to use search, select, implement and capture in its innovation management approaches and strategies.

4.4.1. Search

Huawei's search process as a strategy for emerging with more attractive innovations entail scanning the telecommunication network and consumer electronic market to discern the kinds of unfolding trends as well as ideas that can be extracted from such trends. Huawei was able to use its foundational knowledge of dealing with antennas and base stations to figure out from the emergence and growth of Chinese vast smart cities that the need for efficient connectivity and communication networks would easily arise in the near future(Noyan, 2021).

Following the frustrations of the consumers and businesses with the costs and poor reliability of the existing telecommunication networks, Huawei was able to identify gaps ignored by its rivals to inform its ideas on the innovations to undertake. In addition, Huawei also got ideas from the complexities and costs that the existing telecommunication companies had to undergo in purchasing, laying and modifying the previous telephone cables that hold the electronic communication networks (Nikkei, 2019).

Combined with lack of such cables in most rural parts of China, India, Middle East, South America and Africa, all these motivated Huawei's innovation ideas that led to the development of more efficient, cost-effective, reliable and fast microwave/wireless, Cloud X and 4/5G technologies as well as cheaper premium quality and value smartphones. But as Huawei undergoes such processes of search and idea generation, it also tends to subject such ideas to a rigorous selection process (Ambashi, 2017).

4.4.2. Select

Select is the process of choosing the best ideas for translation into products, processes, position or business models that can create, deliver and capture the desired values (Tidd

&Bessant, 2021). Huawei's idea selection process tends to be guided by the kinds of ideas that would offer products and values that are presently not offered by the competitors.

Huawei generates its ideas from learning and imitation, but it does not duplicate what its rivals are already doing (Lightreading, 2021). This explains why it selected ideas that led to the production of cheaper U8220 and U8230 smartphones with Android-powered gadgets that offer similar services like Apple's smartphones but with other attractive features. It also explains why it also had to research on the sophistication of radio airwaves to generate electronic innovation ideas that were translated into microwave/wireless electronic communication technologies (Kimura, 2020).

Huawei's idea selection is influenced by the overall attractiveness of the potential market if such ideas are translated into actual products as well as the technological and commercial capabilities to sustainably create and deliver such products to the present and future markets. All these explain why Huawei decided to venture into ideas that would create not only more efficient and reliable electronic communication technologies to capture the developed markets, but also cheaper products to capture the low income markets. Huawei also tends to create more appropriate framework for the implementation of its innovation ideas into realities (Fischer, 2021).

4.4.3. Implement

To implement its innovation ideas, Huawei has created three business units where the designated ideas are forwarded to the right business units for implementation (Bohatala, 2020). The three business units include Carrier Network Business Unit that receives and implements innovation ideas associated with wireless technologies, fixed networks, carrier software and network energy solutions.

Consumer Business Unit is the other unit that manages the implementation of innovation ideas associated with handset and smartphone developments (Bohatala, 2020). Enterprise Business Unit links the two units to manage Huawei's pipe strategy that deals with the acquisition, analysis, processing, creation, presentation, storage, transportation and distribution of data and the required information.

As Huawei uses such structures, it has also developed a more innovative innovation leadership and management framework that has rotational CEOs which is the only form of innovation leadership model in the world where in a year, a CEO is rotated and changed three times (Jackson, 2018). This permits the proliferation and translation of new ideas into new innovations that can create the desired values for Huawei. This innovation leadership manages multiple teams that work under innovation culture emphasising high level of creativity and collaboration amongst themselves as well as the required external teams.

To implement its innovation ideas, Huawei also partners with critical partners like Google, 3Com and Symantec with the capabilities to boost its electronics and telecommunication network, hardware and software engineering capabilities to develop and deliver superior problem-solving technologies (Drahokoupil, McCaleb, Pawlicki&Szunomar, 2017). As this explains why Huawei has often developed superior revolutionary telecommunication network technologies, analysis also suggests Huawei to use a combination of strategies to capture values from its innovations.

4.4.4. Capture

Huawei's strategies for capturing values from its innovations entail utilisation of market penetration pricing strategy by adopting lower prices and stronger promotional messages aimed at not only increasing sales in low income markets, but also in high income European

markets like UK, France, Germany and Spain (Romans, 2020). It also uses channel marketing strategy where due to its good reputation and cooperation with telecom companies, such telecom companies also tend to promote Huawei's products and services across their channels and networks (Jin & Yin, 2019).

Brand image building marketing and promotions are also used to capture most of the European markets through staff selling, advertising, business promotion, celebrity endorsements and sponsorship of most European Football Clubs. As these have enabled Huawei to increase its sales, profitability and market share in the European, South American, Asian and African markets, Huawei also uses overseas salesmen, frequent sales promotion management training and sales performance incentives (Martinroll, 2021).

Huawei also continues to develop and unleash a series of superior electronic communication problem-solving technologies and update the public about the progress of its latest R&D. Huawei uses such approach as a strategy of building customer confidence and trust that technological innovation is naturally part of its DNA (Xiao, 2019). It is such increasing customer confidence and trust which is increasingly dispelling the notion that "Made in China" are cheap and of poor quality. In such a process, Huawei further uses concentric diversification to attract and increase its sales in related and similar markets.

5. Managerial Implications

From these best Apple and Huawei's innovation culture, findings as reflected in Figure 1 imply to develop an Innovative Enterprise Model, business executives must encourage the emergence of a culture of continuous identification of unfilled market gaps to do what others are not doing. This must be accompanied with continuous search, selection, implementation and capturing values from new innovation ideas and continuous integrated product, process, position and paradigm innovation to eliminate innovation deficiency where some innovation ventures focus on product innovations at the expense of process, position and paradigm innovations.

Creation of such innovative enterprise culture must be supported by a culture of creative leadership, overall organisational creativity and innovation, constant enormous R&D investment without fearing wastes as well as partnership, collaboration and strategic alliances with key partners to bolster innovation capabilities.

If all these are adopted, the overall leveraging effects of an innovative enterprise culture on a firm's performance can be reflected in high level of creativity and innovativeness, improved competitive edge arising from unique product, process, position and business paradigm differentiations.

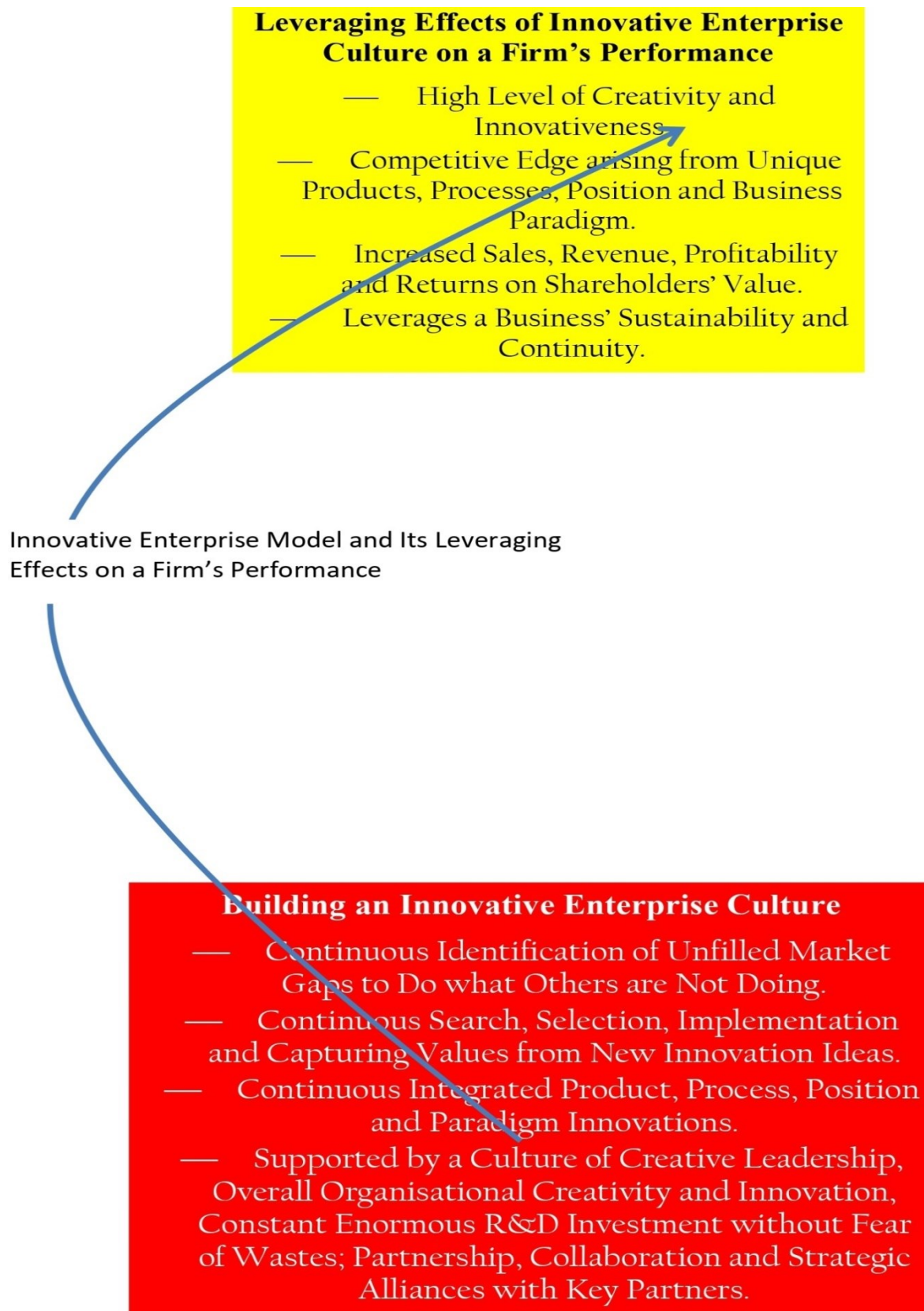


Figure 1. Innovative Enterprise Model and Its Leveraging Effects on a Firm's Performance

As Figure 1 indicates, innovative enterprise culture can also catalyse increased sales, revenue, profitability and returns on shareholders' value as well as leverage of a business' overall sustainability and continuity. However, even if that is the case, considering the limitations

that Apple and Huawei are experiencing, it is suggested that each must adopt the following strategies:

Apple should consider:

- Modifying its position innovation to not only target the premium electronics consumer segments, but also the low income segments by reviewing its operational and manufacturing costs to lower prices and fill gaps in the low income markets that Huawei and Samsung are using as the attack base.
- Rethinking its radical product innovations as there are already emerging market concerns that Apple has already reached the innovation ceiling and cannot introduce any more radical products due to failure of innovations like Apple TV and Apple watch/Apple Pay.

Huawei needs to:

- Continue improving the quality and superiority of its products and services as a strategy of dispelling the notion that Chinese made products are cheap because they are of poor quality.
- Resolve its problems with the US government since its political association with Chinese government and ban from the US markets are affecting its brand reputation to attract more US consumers to attack Apple from its main market base.
- Carefully select and pursue its product innovations due to the increasing notion that innovation ventures like Nokia that spent enormously in R&D still failed when new entrants emerged.

6. Conclusion

As firms strive to leverage their competitiveness in the increasingly more competitive global business landscape, innovation is a critical pivotal driver of a firm's quests to achieve that. Even for the less innovative sector or businesses, innovation is still critical for creating some elements of product, process, position and paradigm differentiation to bolster a firm's overall competitiveness. It is through that the more innovative firms are able to bolster the increment of their customer attraction, retention and loyalty. In the immediate and long run, this can improve sales, revenue, profitability and returns on shareholders' value.

But to achieve that, adoption of an enterprise innovative culture is a prerequisite for ensuring that innovation is embraced across the business organisational structure as a daily practice and way of life that define how each and every activity is accomplished. As the innovative enterprise development model in Figure 1 suggests, such initiatives must be accompanied with the embracement of a more innovative organisational leadership, a culture of creativity, stronger investment in R&D and collaboration and strategic partnership with the requisite key partners to bolster a firm's innovative capabilities in areas where a business has weaknesses.

Even if this research offers insights on the importance of innovative enterprise culture and how to develop one, future research must consider exploring the implication of strategic alliance on a firm's innovative capabilities in the constantly changing contemporary business environment.

Acknowledgment

Gratitude to The Business School, Edinburgh Napier University-Scotland for Providing the Resources that rendered it possible for the Successful Accomplishment of this Research Project.

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