

GLOBAL BIOMETRIC AUTHENTICATION & IDENTIFICATION MARKET: FOCUS ON TECHNOLOGY, MODALITY, & APPLICATION

– Estimation & Forecast, 2015–2020

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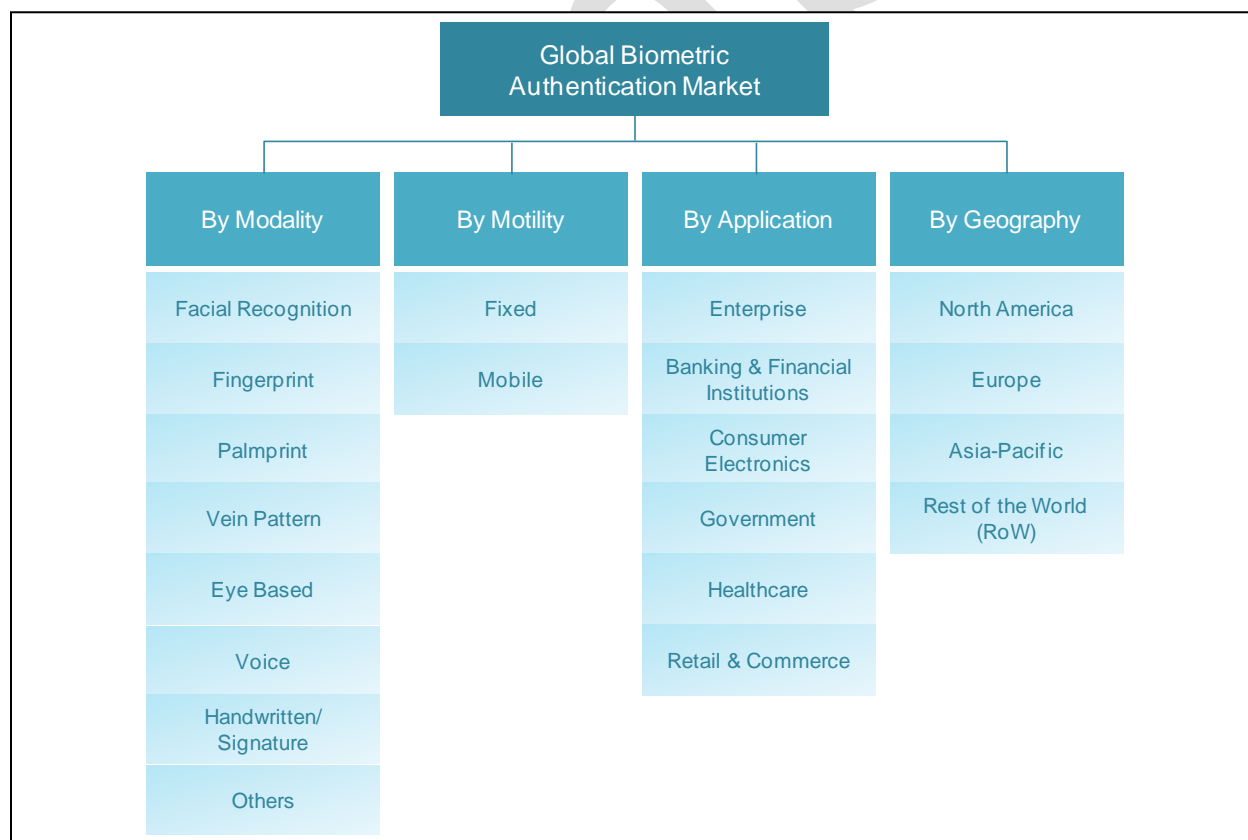
1 REPORT SCOPE

1.1 GLOBAL BIOMETRIC MARKET SEGMENTATION

The biometric authentication and identification market is segmented by modality, motility, application, and geography. Each segment of the market covers major sub-segments contributing to the biometric market value. A niche sub-segments (“others”), in biometric modality segment, is also covered and considered to evaluate the market value.

FIGURE 1

BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET – SEGMENTATION



Source: BIS Research Analysis

1.2 REPORT DESCRIPTION

The report is based on the biometrics authentication and identification market, one of the fastest growing markets globally, progressing with rapid integration of technology and electronics devices such as wearable products and consumer electronics among others..The recent news about the launch of biometric registration process for refugees by The United Nations' High Commission for Refugees (UNHCR) and the initiation of the biometric ID enrolment programs by China, Middle East countries (Saudi Arabia, Israel, and UAE), and India among other developing countries in last few years have derived our attention to this market.

The global biometrics market trends are shifting towards mobile biometrics devices from fixed biometrics devices, and also, the trend of touch-less biometrics is emerging. The biometrics devices have been focused in the report due to increasing concern for physical security and its multiple uses across applications such as Healthcare, Government, Enterprise, Banking and Financial Institution, and Consumer Electronics among others. The biometrics devices measure both physiological and behavioral aspects of human beings and has become a significant tool in the global physical security market which is increasingly being adopted by large number of organizations to create devices that will enhance the existing or new security installations.

The report comprehensively answered the questions stated below:

- What are the key drivers, growth trends, and key challenges for future growth of Biometrics market in the next 3-5 years?
- Who are the key market players and key component providers?
- What are the different modalities under Biometrics and how will the market for individual modality grow through the forecast period?
- What are the recent breakthroughs which might lead to the dominance of such technologies in the market?
- How are the various modalities mapped across different applications including Government, Healthcare, Enterprise, Consumer Electronics, Banking and Financial Institutions?

- Which geographical regions are going to be the major market for Biometric systems and why this market is emerging at high rate in Asia-Pacific and Middle-East countries?
- What will be the compounded annual growth rate (CAGR) for the global market and individually for different modality motility, application, and geography?
- How significantly do the global and the local competition affect the company's market share?

The main focus of the research study was to cover maximum qualitative and quantitative information. Research methodology of the “Biometric authentication and identification” study includes primary as well as secondary research. The market information was taken from the key industry leaders in biometrics industry, as well as from several secondary resources.

The global biometric authentication and identification systems market is expected to grow approximately over \$XX billion by 2020 at an estimated CAGR of XX% from 2015 to 2020. While major demand is sourced out of APAC and Middle East, countries such as the U.S. and U.K. continue to be the leading revenue generating countries in the global market, Government of these countries are implementing laws and encouraging heavy investments in major research and development projects to support advanced innovations.

For long time, the market has been dominated by the fingerprint modality as it is easy to use and have low implementation cost. However, the trends are now inclined towards next generation biometrics that includes touch-less biometrics (facial, iris, retina, and voice), DNA biometrics and multimodal biometrics.

2 EXECUTIVE SUMMARY

As the global population is becoming more concerned for security and safety, the biometrics authentication and identification market is booming at rapid growth rate and is adopted by almost all applications such as Government (Law enforcement, Border security, ID issuance and Homeland Security), Healthcare, Enterprises, Banking and Financial Institutions, Consumer Electronics and Retail and Commercial verticals.

In the last few years, the world has witnessed a series of technological innovations that make the biometrics both technically and commercially feasible today. A few prominent enabling technological advancements are the emergence of touch-less biometrics, portable biometrics devices, and others. Convergence of market forces and parallel innovation enabling technologies has led to the present state of the industry, where we are seeing a new device being launched in the market at an unprecedented rate.

The biometric devices capture both physiological and behavioral aspects of human beings. In terms of product, the biometrics devices would include products such as fingerprint scanners, facial recognition devices, vein pattern scanners, iris and retina scanners, voice modulation devices, and multimodal devices among others. The integration of biometrics devices in wearable products and rise of portable biometrics devices are the factors that are driving the market.

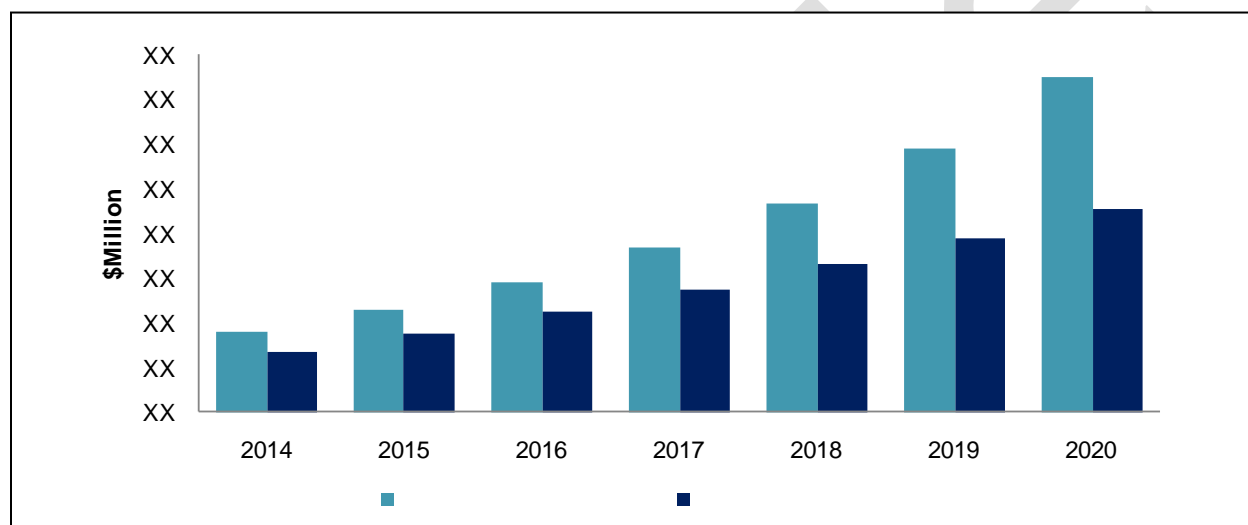
The biometric authentication and identification market has a very high potential in future. The upcoming wave of biometrics devices is likely to shake number of industries such as Healthcare, Retail and Commerce, Banking and Financial Institutions, Consumer Electronics and many others. Some of the challenges that these devices faced include expensive products, privacy concerns, and acceptance of technical up gradation.

With the evolution of next generation devices, the cost is expected to come down substantially for the high-end products. With technological advancement and increasing number of product launches the market will witness a gradual decrease in the cost of such products. Also the devices have improved to a better acceptance rate among the end-user. Further advancement

is expected in the design and form factor reduction of these devices as more established technology players such as Apple, Synaptics Inc., Precise Biometrics, Bio-Key International Inc., etc. launch their product in the market.

FIGURE 2

GLOBAL MOBILE BIOMETRIC MARKET, 2014-2020 (\$MILLION)



Source: M.E. - BIS Research

The market analysis end with the study of global mobile biometric market that is divided into two sub segments; consumer electronics based mobile devices and other portable devices. The consumer electronics accounted for \$XX billion in 2014 and it has been via the contribution of biometrics integrated smartphones, iPhones, tablets and wearable devices. The market of consumer electronics is estimated to grow at a CAGR of XX% from 2015 to 2020. The portable devices include iris and retina scanners, fingerprint scanners and many other devices and the revenue from other portable devices was \$XX billion in 2014 and is predicted to increase in forecast period as they are more convenient to use and carry.

3 MARKET DYNAMICS

3.1 INTRODUCTION

The global biometric authentication and identification market has been identified as one of the fastest growing industry, owing to the changing dynamics of the legal and regulatory framework and the intense competitive rivalry among surplus of public companies.

The following segment will discuss the key market driving and restraining / challenging forces, including the Impact Analysis for the same. Also, the opportunities have been identified and discussed which can be used to the market player's advantage to uplift their market position in the growing industry.

3.2 MARKET DRIVERS

The global biometric authentication and identification market has evolved through several advancements both in hardware and software. The massive proliferation of Smartphones and tablets has been largely responsible for ramping up the sales for the global market, Growing Popularity of Wearable Technology, Increasing Adoption of E-Commerce Services, Provision of Second/Third Level of Security Using Multimodal Biometric Authentication Systems, Increasing Government Support through Organizations such as DHS (Homeland Security), Increasing Adoption of Biometric Authentication in Banking And Healthcare Sector (E-Banking And Mobile Payments) and Increased Security & Convenience for Consumers. These drivers ensure the fast growth of the industry and are discussed below: -

3.2.1 MASSIVE PROLIFERATION OF SMARTPHONES AND TABLETS (MOBILE BIOMETRICS)

The massive proliferation of Smartphone and tablets with biometric capabilities is increasing due to the demand for post-password security among the users. iPhone fingerprint locking, Mac Book retina scanning and other identification features are being used by several companies which are relentlessly working to bring biometric security for online services. For example- in March 2015, Apple Inc. updated the XX-inch Mac Book Pro with a retina display

and Sensory, Inc. in June 2014 launched combined voice and vision biometric authentication for mobile phones, tablets and PCs.

3.3 MARKET CHALLENGES

Market challenges are the factors which are slowing down the growth of the market. These factors challenge the market players from meeting the industry requirements and performing ideally. The major challenges faced by the biometric industry are Cost of Deployment of Emerging Biometric Solutions, Integration of Biometric Technology into Existing Software, Latent Fingerprinting and Spoofing and Misuse of Stored Data /Privacy Breach. These challenges are discussed below: -

3.3.1 COST OF DEPLOYMENT OF EMERGING BIOMETRIC SOLUTIONS (DNA, RETINA, AND IRIS AMONG OTHERS)

Touch-less biometrics are widely touted to become the preferred choice in the future biometric security systems. They come with many advantages with accuracy, reliability, and hygiene being the prominent ones. Banks and financial institutions are anticipated to become the prime beneficiaries of such technologies, since there are numerous cases of fraud and identity breach leading to financial losses. However, in spite of the benefits and superiority that touch-less biometrics possess, they are offered at much higher prices as compared to the prevailing fingerprinting and similar technologies.

The industry leaders are of the opinion that the cost of the biometric solution being deployed is largely dependent on the application. Irrespective of this fact, there is a remarkable difference between the cost of fingerprinting, the least expensive biometric modality (after voice), and iris or facial recognition systems. This particular challenge can only be addressed with increased spending on research and development and production in bulk. As the demand for more accurate and hygienic biometric solutions will increase, the cost is expected to come down for touch-less biometrics.

3.3.2 MISUSE OF STORED DATA (BIOMETRIC TEMPLATE STORAGE) / PRIVACY BREACH

When everything is on the cloud, hacking is an associated challenge and cannot be avoided. Most of the Consumers and Enterprise organizations are reluctant to use the biometric systems since the storage of their biometric information in digital representation can be easily stolen, lost, or otherwise compromised.

Biometric as a credential is a permanent aspect for gaining access across any control system since they remain the same and cannot be altered or changed. If an anti-social element breaches in the security system using an individual's biometric, the user will have to do away with the entire installation, since the system once compromised continues to be an issue for the user.

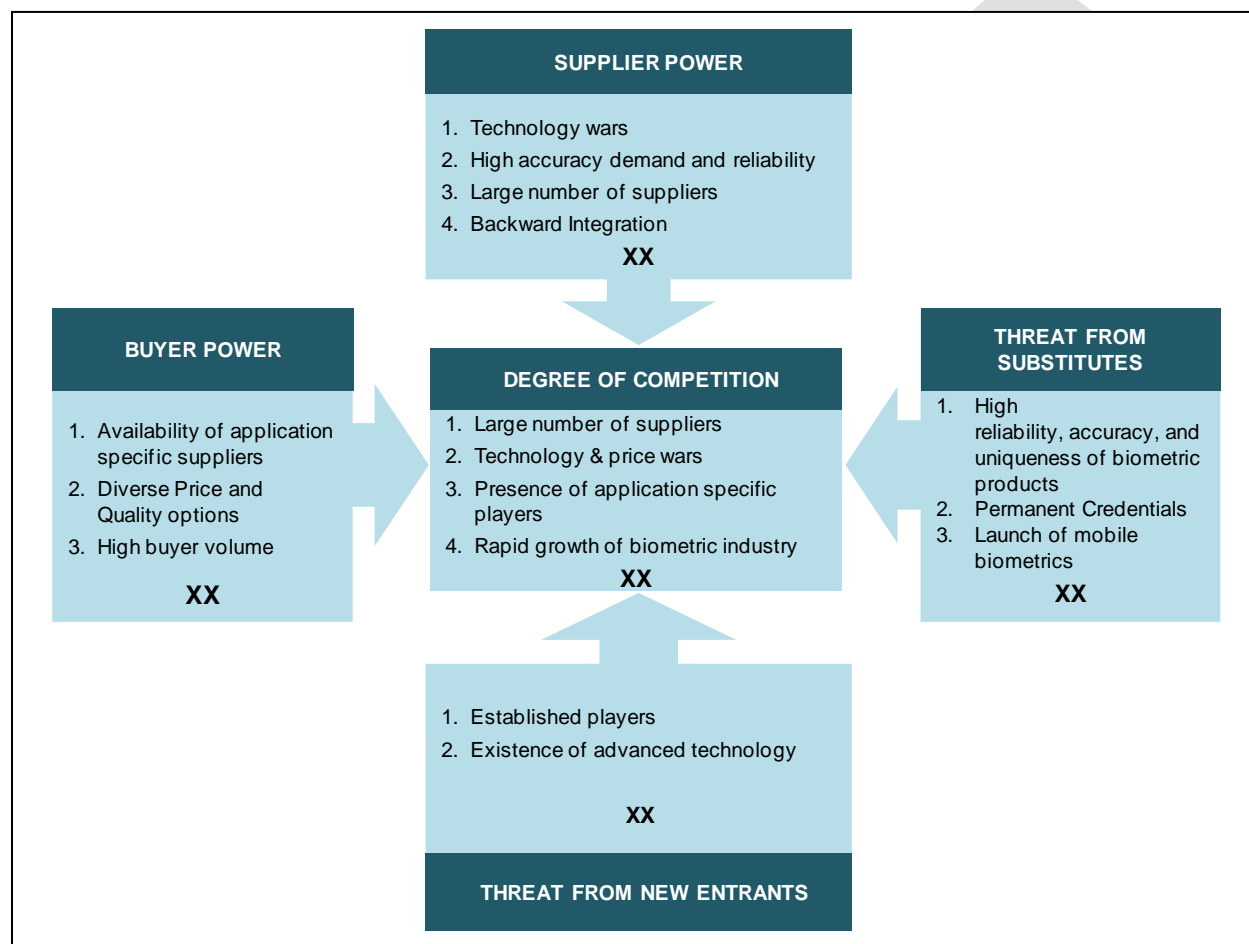
3.4 MARKET OPPORTUNITIES

Market opportunities are those untapped factors that are expected to boost the growth of the market. These factors can be referred to as the untapped drivers (layman term) of the market. The major opportunities faced by the biometric industry are Future in E-Commerce, Emerging Trends in Mobile Segment and Emerging Technologies in Biometrics. These opportunities are discussed below: -

3.5 PORTER'S FIVE FORCES ANALYSIS

FIGURE 3

PORTER'S FIVE FORCES ANALYSIS



Source: BIS Research Analysis

4 GLOBAL BIOMETRIC AUTHENTICATION MARKET, BY MODALITY

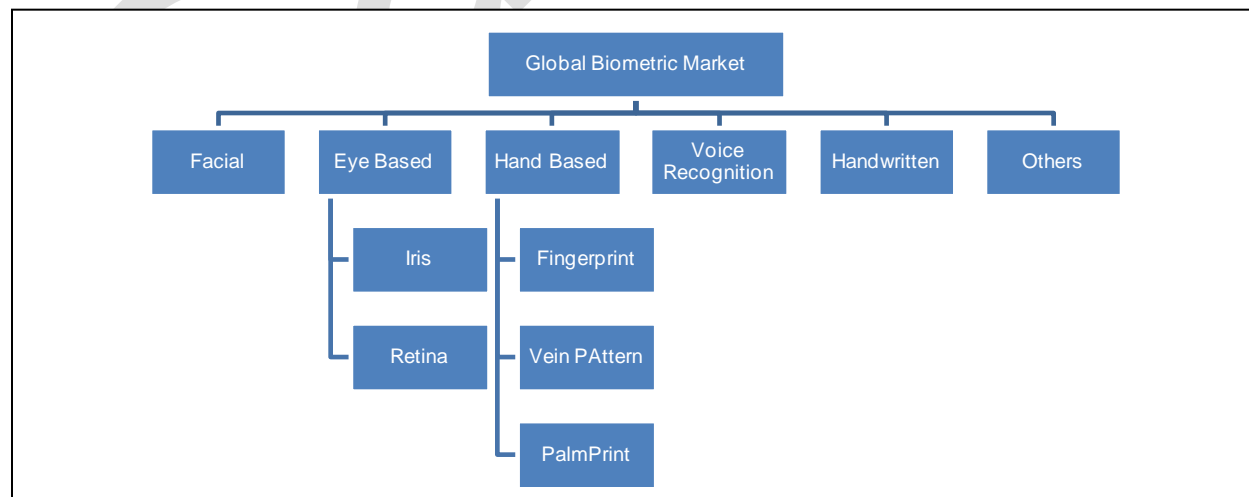
4.1 INTRODUCTION

Technology is a dynamic aspect for the physical security industry, especially when it strives to make human life easier and more secure. Moreover, with the penetration of information technology, where on one hand ensuring security and restricting access has become unchallenging, on the other hand the threat to breaching such security measures has become rather frequent. In lieu of code and password based systems or access card systems, which rely on information that are susceptible to theft or loss, biometrics techniques provide access based on characteristics that are always under the users' possession.

The market for biometric systems is analyzed by studying the individual biometric systems such as face recognition systems, palm recognition systems, iris recognition systems, signature recognition and others.

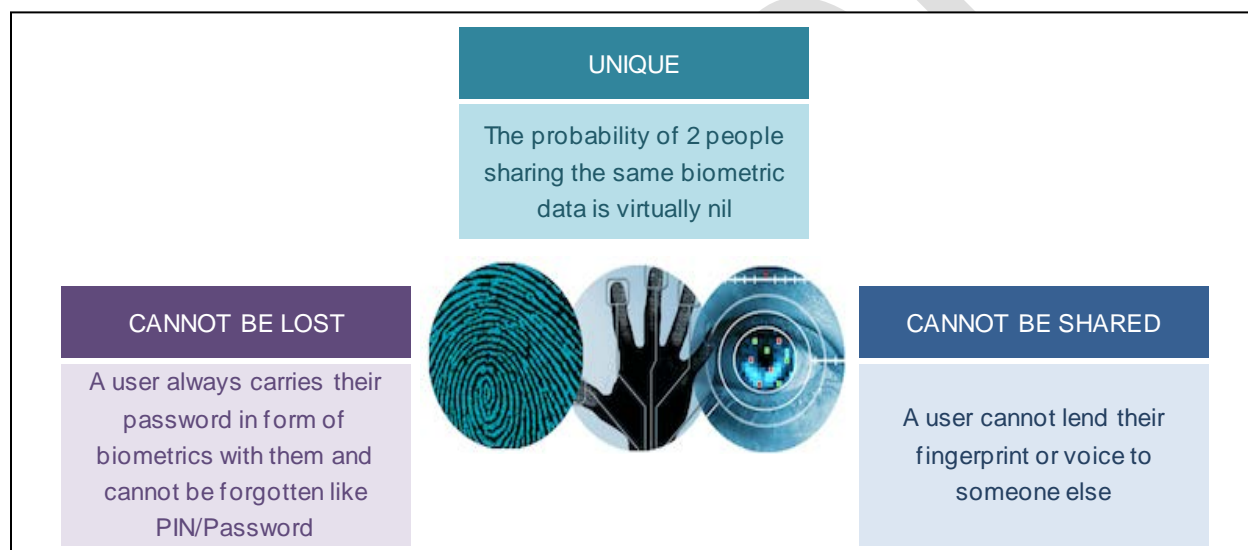
FIGURE 4

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET: GEOGRAPHICAL SEGMENTATION



Source: BIS Research Analysis

Biometric systems are often associated with application areas such as high security laboratories, banks, and other similar areas, however, it is interesting to note that Airport Security, Consumer Electronics (Smart Phones), and Healthcare are also getting attracted to the many advantages of using biometric systems. Prominent names from the physical security market are associated with biometric systems such as Safran Group, Cross Match Technologies Inc., and Fulcrum Biometrics among others.

FIGURE 5**WHY BIOMETRIC AUTHENTICATION SYSTEMS ARE SECURE?**

Source: BIS Research Analysis

The above figure represents the key enablers towards the adoption of biometric authentication in access control and identification purposes.

It is in the recent years that huge investments are being incurred on biometric systems and their potential applications. Conditional access through biometric security has become all the more important after the increasing incidences of terrorist activities such as the Boston Marathon bombing incident. It is not just the terror incidents that are driving the market for biometric authentication systems. Biometrics has penetrated in the everyday lives of consumers by complying with smartphones. Eminent players such as Apple acquiring

AuthenTec, a company focused on fingerprint reading and identification management software, for \$XX million in 2012 is one of the examples of the changing scenario in the physical security market. Furthermore, when iPhone5s was launched, the company proudly boasted the fingerprint access control feature. Samsung and Motorola have also been following similar paradigms.

4.2 MARKET STATISTICS

TABLE 1

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET BY MODALITY, 2014-2020 (\$BILLION)

Modality	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Facial Recognition	XX	XX	XX	XX	XX	XX	XX	XX%
Fingerprint	XX	XX	XX	XX	XX	XX	XX	XX%
Palmprint	XX	XX	XX	XX	XX	XX	XX	XX%
Vein Pattern	XX	XX	XX	XX	XX	XX	XX	XX%
Eye Based	XX	XX	XX	XX	XX	XX	XX	XX%
Voice	XX	XX	XX	XX	XX	XX	XX	XX%
Handwritten/ Signature	XX	XX	XX	XX	XX	XX	XX	XX%
Others	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The global value of the global biometric market by modality was \$XX billion in 2014 and is expected to grow over \$XX billion at a CAGR of XX% from 2015 to 2020. The major share is accounted for fingerprint segment that was \$XX billion in 2014 and is forecasted to reach \$XX

billion by 2020 at a CAGR of XX% from 2015 to 2020. However, handwritten/signature segment will show the fastest growth in the forecast period and is forecasted to reach \$XX million by 2020 from \$XX million in 2014 at a CAGR of XX% from 2015 to 2020.

4.3 CLASSIFICATION OF BIOMETRIC SYSTEMS

4.3.1 MARKET STATISTICS

TABLE 2

GLOBAL FACIAL RECOGNITION BIOMETRIC MARKET, BY MOTILITY, 2014-2020 (\$BILLION)

Motility	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Fixed	XX	XX	XX	XX	XX	XX	XX	XX%
Mobile	XX	XX	XX	XX	XX	XX	XX	XX%
Total	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The global facial biometric market by motility is increasing at a CAGR of XX% from 2015 to 2020. It was accounted for \$XX billion in 2014 and is forecasted to reach \$XX billion by 2020. The mobile biometrics has more potential to increase at a CAGR of XX% during the forecast period, 2015 to 2020 and the contribution will be via smartphones, tablets, and laptops and also a small share is expected from portable biometric scanners used by law enforcement agencies.

TABLE 3

**GLOBAL FACIAL RECOGNITION BIOMETRIC MARKET,
BY APPLICATION, 2014-2020 (\$MILLION)**

Application	2014	2015	2016	2017	2018	2019	2020	CAGR (2015-2020)
Enterprise	XX	XX	XX	XX	XX	XX	XX	XX%
Banking & Financial Institutions	XX	XX	XX	XX	XX	XX	XX	XX%
Consumer Electronics	XX	XX	XX	XX	XX	XX	XX	XX%
Government	XX	XX	XX	XX	XX	XX	XX	XX%
Healthcare	XX	XX	XX	XX	XX	XX	XX	XX%
Retail & Commerce	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The global facial recognition market value is \$XX billion in 2014. The Government application segment is accommodating major share of the biometric market and is expected to grow over \$XX billion by 2020 from \$XX million in 2014 because of increase in deployment of biometrics products in border security and also, due to the growth of video surveillance. The second major application segment of facial biometrics is in Consumer electronics, as the deployment of facial recognition biometrics products in smartphones, iPhones, laptops and wearable products has increased in the last few years and is expected to grow over \$XX billion by 2020 at a CAGR of XX% from 2015 to 2020. However, with the increased proliferation of retail outlets globally, retail and commerce has been identified as the growing segment at a CAGR of XX% during forecast period after the healthcare segment that has been estimated to grow with the CAGR of XX% from 2015 to 2020.

TABLE 4

**GLOBAL FACIAL RECOGNITION BIOMETRIC MARKET, BY REGION,
2014-2020 (\$MILLION)**

Region	2014	2015	2016	2017	2018	2019	2020	CAGR (2015-2020)
North America	XX	XX	XX	XX	XX	XX	XX	XX%
Europe	XX	XX	XX	XX	XX	XX	XX	XX%
Asia-Pacific	XX	XX	XX	XX	XX	XX	XX	XX%
ROW	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The facial biometric market value is expected to grow over \$XX billion by 2020. From above table we can predict that the Asia-Pacific will lead the market by 2020 at a CAGR of XX% from 2015 to 2020 that will accounted for \$XX billion by 2020. The primary reason is the ID enrollment projects that have been started in countries such as China and India. Africa and Middle East are very small markets but are expected to grow at a very fast rate of XX%.

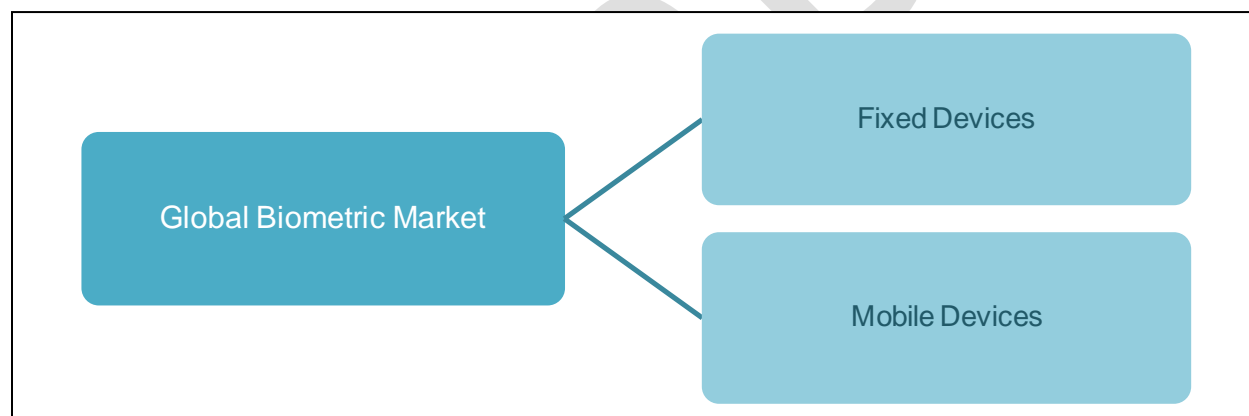
5 GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET, BY MOTILITY

5.1 INTRODUCTION

The global biometrics has been further classified into mobile and fixed biometrics devices. The mobile devices are expected to grow in the forecast period as they are more convenient to use and carry.

FIGURE 6

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET: MOTILITY



Source: M.E. - BIS Research

5.1.1 MARKET STATISTICS

TABLE 5

GLOBAL BIOMETRIC MARKET, BY MOTILITY, 2014-2020 (\$BILLION)

Motility	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Fixed	XX	XX	XX	XX	XX	XX	XX	XX%
Mobile	XX	XX	XX	XX	XX	XX	XX	XX%
Total	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The global market value of motile biometric devices was \$XX billion in 2014 and predicted to rise to \$XX billion by 2020. Fixed biometrics devices are accommodating a major share of the market and are expected to account \$XX billion by 2020 growing at a CAGR of XX% from 2015 to 2020. Despite of this fact, mobile biometrics are growing at much faster CAGR of XX% and are expected to lead the market by the end of 2020. The mobile devices or portable devices are highly used in Consumer Electronics and also, in border security systems. The portable devices are easy to carry and are used at large scale in iris and retina scanning and in other applications also.

5.2 FIXED

The fixed devices are mainly used by Government, Enterprise and Healthcare segments. They are mostly used in large scale infrastructure for purpose of time management and attendance system. The fixed biometrics devices such as fingerprint scanners, palmprint scanners, facial recognition and handwritten/signature among others are most deployed biometrics modalities under fixed systems. The law enforcement, airport security, and ID issuance are deploying fixed devices for knowing their citizen/travelers as to ensure more national security. The global market has been quantified below.

5.2.1 MARKET STATISTICS

TABLE 6

GLOBAL FIXED BIOMETRIC MARKET, BY MODALITY, 2014-2020 (\$MILLION)

Modality	2014	2015	2016	2017	2018	2019	2020	CAGR (2015-2020)
Facial Recognition	XX	XX	XX	XX	XX	XX	XX	XX%
Fingerprint	XX	XX	XX	XX	XX	XX	XX	XX%
Palmprint	XX	XX	XX	XX	XX	XX	XX	XX%
Vein Pattern	XX	XX	XX	XX	XX	XX	XX	XX%
Eye Based	XX	XX	XX	XX	XX	XX	XX	XX%
Voice	XX	XX	XX	XX	XX	XX	XX	XX%
Handwritten/ Signature	XX	XX	XX	XX	XX	XX	XX	XX%
Others	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The total value of fixed biometrics market was \$XX billion in 2014 and is expected to grow at a CAGR of XX% from 2015 to 2020. The fingerprint devices are accommodating major share of the market as they are highly deployed in Government, Healthcare, Enterprises and other application segments. The fingerprint segment is growing at a CAGR of XX% during the forecast period. However, signature biometrics is expected to grow at fastest rate of XX% followed by palmprint and eye based segment that will accounted for \$XX million and \$XX billion respectively by 2020.

TABLE 7

**GLOBAL FIXED BIOMETRIC MARKET, BY REGION,
2014-2020 (\$BILLION)**

Region	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
North America	XX	XX	XX	XX	XX	XX	XX	XX%
Europe	XX	XX	XX	XX	XX	XX	XX	XX%
Asia-Pacific	XX	XX	XX	XX	XX	XX	XX	XX%
RoW	XX	XX	XX	XX	XX	XX	XX	XX%
Total	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The fixed biometrics market will account for \$XX billion by 2020 as the demand for fixed biometrics in Government's law enforcement, forensic departments, Enterprises and Healthcare is increasing at a very high rate. North America is currently leading the market, followed by Europe and accounted for \$XX billion and \$XX billion in 2014 respectively. APAC region will be the leader by the end of 2020 and is estimated to grow at a CAGR of XX% from 2015 to 2020. The fixed biometrics demand is very high in this region due to government initiative and compliances for compulsory enrolment and biometric identity.

6 GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET, BY APPLICATION

6.1 INTRODUCTION

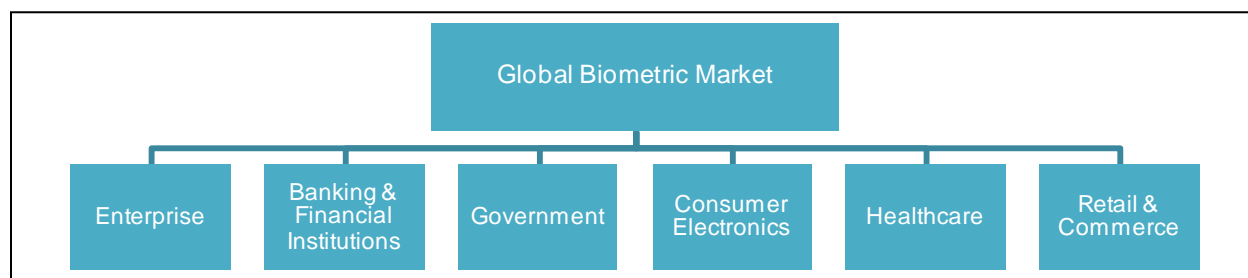
The penetration of biometrics in authentication systems is rapidly gaining momentum owing to the increasing crime rate and fraudulent access to high security areas. Market Segments such as criminal investigation (forensics), banks, and penitentiaries among others have been benefited the most, with the introduction of biometric in access control systems. With traditional access control systems wherein locks and keys were used to manually provide access to individuals, there were associated disadvantages of identity compromise and misuse of position. The modern day biometric solution eliminates the need of managing access through key and locks and brings the users with features of automating the authentication and access control features.

Since 2012, the biometric access control market is being largely driven by multifarious acquisitions and partnerships involving market giants and smaller players alike. Players from a host of industry verticals such as HID Global (ASSA ABLOY) and Apple are providing advanced access control solutions, having acquired dedicated biometric companies such as Lumidigm and Authentec respectively. Where government and defense organizations have been the early adopters of biometric technology, banking and e-commerce are the newer market segments that are being explored by the industry players. Also, the trend of Bring Your Own Device (BYOD) has propelled the demand of mobile biometrics across Enterprise applications.

The application market for biometric access control market has been analyzed for Enterprise, Banking & Financial Institutions, Government (Defense and Security), Retail and commerce, Healthcare, and Consumer Electronics.

FIGURE 7

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET : APPLICATION



Source: M.E. - BIS Research

6.1.1 MARKET STATISTICS

TABLE 8

GLOBAL BIOMETRIC MARKET BY APPLICATION, 2014-2020(\$BILLION)

Application	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Enterprise	XX	XX	XX	XX	XX	XX	XX	XX%
Banking & \Financial Institutions	XX	XX	XX	XX	XX	XX	XX	XX%
Consumer Electronics	XX	XX	XX	XX	XX	XX	XX	XX%
Government	XX	XX	XX	XX	XX	XX	XX	XX%
Healthcare	XX	XX	XX	XX	XX	XX	XX	XX%
Retail & Commerce	XX	XX	XX	XX	XX	XX	XX	XX%
Total	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

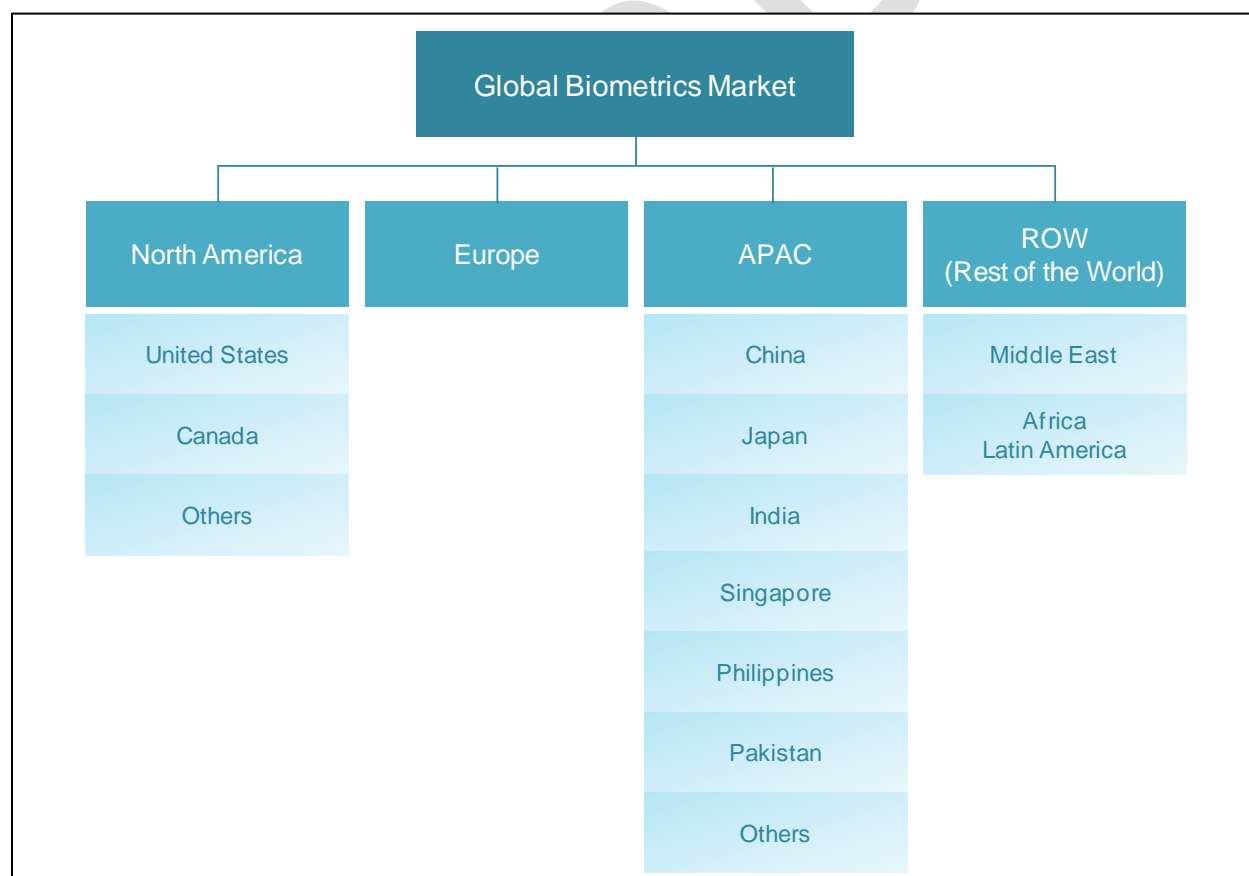
7 GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET , BY GEOGRAPHY

7.1 INTRODUCTION

The global Biometric Authentication and Identification market has been segmented into four geographical regions that include North America, Europe, APAC, and ROW (Rest of the World).

FIGURE 8

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET : GEOGRAPHICAL SEGMENTATION



Source: M.E. - BIS Research

These segments have been further sub-segmented by countries falling under each region mentioned, and the regional segment also includes key trends in particular countries, market dynamic factors of few countries and it also includes name of key participants of each region.

7.1.1 MARKET STATISTICS

TABLE 9

GLOBAL BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET, BY REGION (\$ BILLION), 2014-2020

Region	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
North America	XX	XX	XX	XX	XX	XX	XX	XX%
Europe	XX	XX	XX	XX	XX	XX	XX	XX%
Asia-Pacific	XX	XX	XX	XX	XX	XX	XX	XX%
RoW	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The global biometrics market is forecasted to grow at a CAGR of XX% from 2015 to 2020. The market is dominated by North America at present which accounts for \$XX billion and will become second largest by the forecast period. However, the African and Middle East countries are expected to grow fastest among all regions at a CAGR of XX% forecast period through the forecast period. APAC region will become market leader by the end of forecast period as the demand for Consumer Electronics is increasing in these regions and will accounted for \$XX billion by 2020.

7.2 NORTH AMERICA

The North America segment has been further sub-segmented into the U.S., Canada and other countries of North America. This section includes description of key developments, key directives and key participants of each sub-segment.

7.2.1 MARKET STATISTICS

TABLE 10

NORTH AMERICA BIOMETRIC AUTHENTICATION AND IDENTIFICATION MARKET, 2014-2020 (\$BILLION)

Country	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
United States	XX	XX	XX	XX	XX	XX	XX	XX%
Canada	XX	XX	XX	XX	XX	XX	XX	XX%
Others	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

North America is currently leading the biometric market and the market value was \$XX billion in 2014 and is forecasted to grow at a CAGR of XX% from 2015 to 2020. The U.S. is dominating the major share of the biometrics market in North America and accounts to \$XX billion in 2014 and will reach to \$XX billion by 2020. However, Canada is predicted to grow at highest CAGR of XX% during the forecast period and will accounted for \$XX billion by 2020.

TABLE 11

**NORTH AMERICA: BIOMETRIC MARKET, BY MOTILITY, 2014-2020
(\$BILLION)**

Motility	2014	2015	2016	2017	2018	2019	2020	CAGR% (2015-2020)
Fixed	XX	XX	XX	XX	XX	XX	XX	XX%
Mobile	XX	XX	XX	XX	XX	XX	XX	XX%
TOTAL	XX	XX	XX	XX	XX	XX	XX	XX%

Source: M.E. - BIS Research

The value of North American market by motility is \$XX billion in 2014 and is presently dominated by fixed biometrics devices that accounted for \$XX billion in 2014. Despite of this, mobile biometrics has high potential to grow during the forecast period at a CAGR of XX% from 2015 to 2020. The U.S. visit program has endorsed the deployment of mobile biometrics that is especially used in iris and retina scanners and also in fingerprint technique.

8 MARKET TRENDS, DEVELOPMENTS, & STRATEGIES (2012-2015)

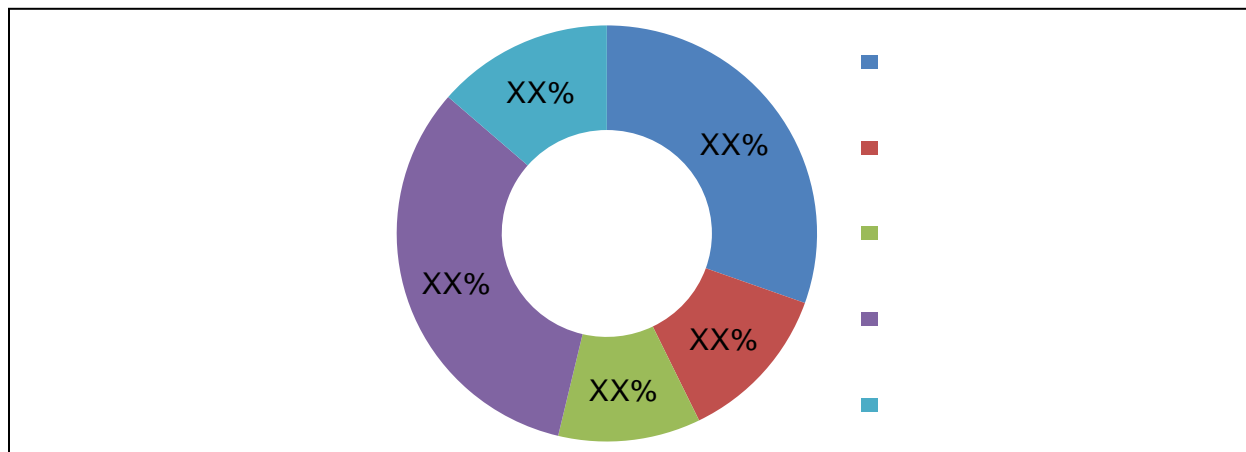
8.1 INTRODUCTION

The global biometric authentication and access control market has witnessed a series of developments in the form of product launch, partnership, collaborations, and most importantly mergers & acquisitions. Where newer companies are striving hard to file patents in this growing market and launch innovative products, established companies are busy acquiring companies operating in different verticals of the biometric industry.

The biometrics products are used by different industry verticals like Healthcare, Mobile Biometric, Border Security and many others. The increasing demand of biometric products in almost every industry has forced companies to focus on new product developments and innovations and also carry out other market developments. In this biometric authentication and access control market major companies are adopting the partnership and collaboration strategy to strengthen their position among other players. The market entropy identifies significant developments and activities in the biometric market. It presents a detailed analysis of strategies and approaches adopted by various key players in the market over the last 3 years, i.e. 2012- 2015.

FIGURE 9

MARKET DEVELOPMENTS 2012-2015



Source: BIS Research Analysis

The Market Entropy activities are split into five categories namely Product Launch & Development, Merger & Acquisition (M&A), Patents/Certification/License, Partnership and Collaboration, and Business Expansion & Contract. The individual activities and the key players are discussed in the subsequent sections.

8.2 PARTNERSHIPS AND COLLABORATIONS

It has been observed with the help of expert inputs and our research that the key strategy of companies to survive or grow in the biometric authentication and access control market is to collaborate with companies from other industry verticals, or jointly work on the development of a new product, or to enter into partnerships with the other small market players. Therefore, this category accounts for the largest share in the market development, i.e. XX% of overall market development. The companies have entered into collaboration to combine their assets in order to achieve a common set of goals.

9 COMPANY PROFILE

9.1 3M COGENT

9.1.1 OVERVIEW

Particular	Specific (as of 2015)
Website	www.3m.com
Contact Details	639 N Rosemead Blvd Pasadena, CA 91107 US Tel: 1-626-325-9600
Year of Establishment	1990
Ownership Type	Public
Company Type	Information Technology & Services
Number of Employees	88667 (as of 2013)
Subsidiaries	3m India Limited, 3M Kenya Limited, 3M China Limited, 3M Colombia S.A., 3M Hungaria Limited, 3M Costa Rica S.A
Competitors	AuthenTec, Bioenable Technologies, Safran Group, SIC Biometrics
Related Products & Services	Access Control Reader Solutions, 3MCAFIS, Mobile Identification Solution, Access Control reader Solution
Other Products	Industrial and Transportation; Health Care; Consumer and office; Safety, Display and Graphics; and Electro and Communications

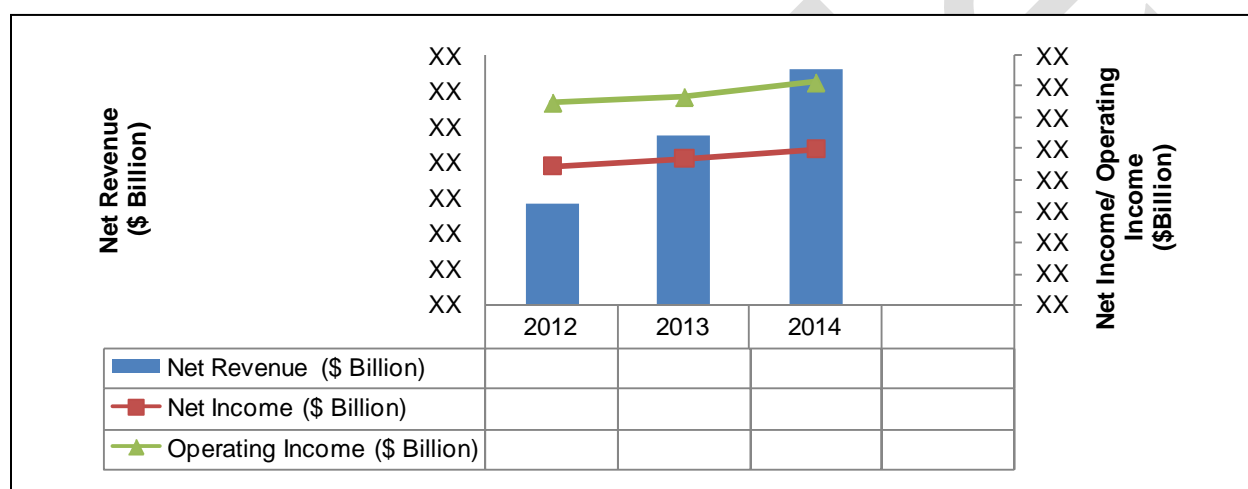
Source: 3M Website, BIS Research

9.1.2 FINANCIALS

9.1.2.1 Overall Financials

FIGURE 10

3M COGENT- OVERALL FINANCIALS, 2012-2014 (\$BILLION)

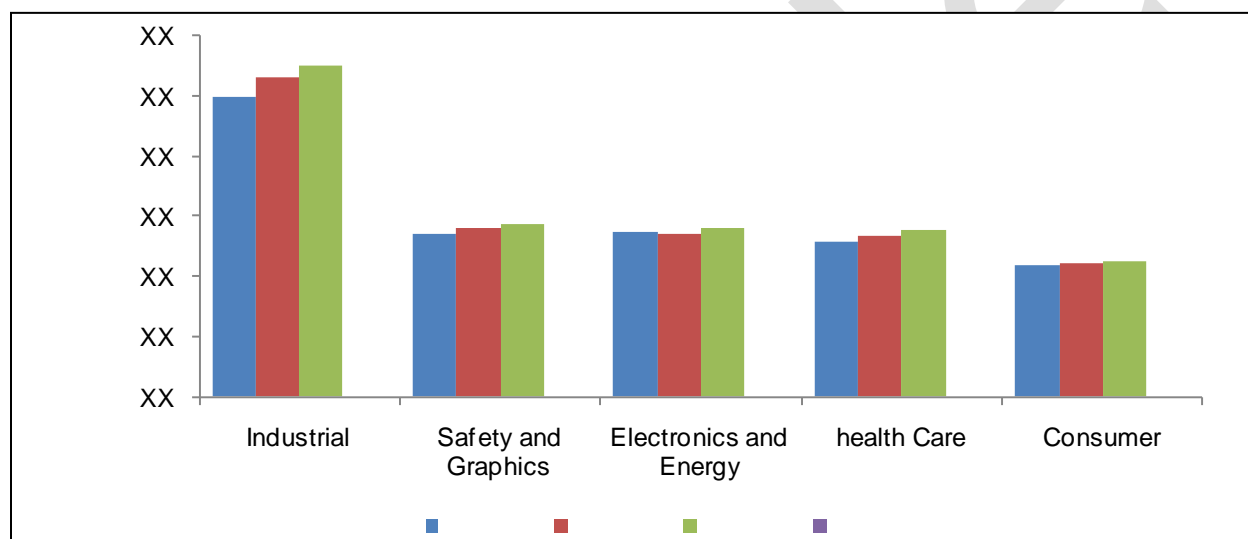


Source: 3M Website, BIS Research

9.1.2.2 Financials by Business segment

FIGURE 11

**3M COGENT-NET REVENUE BY BUSINESS SEGMENT,
2012-2014 (\$MILLION)**

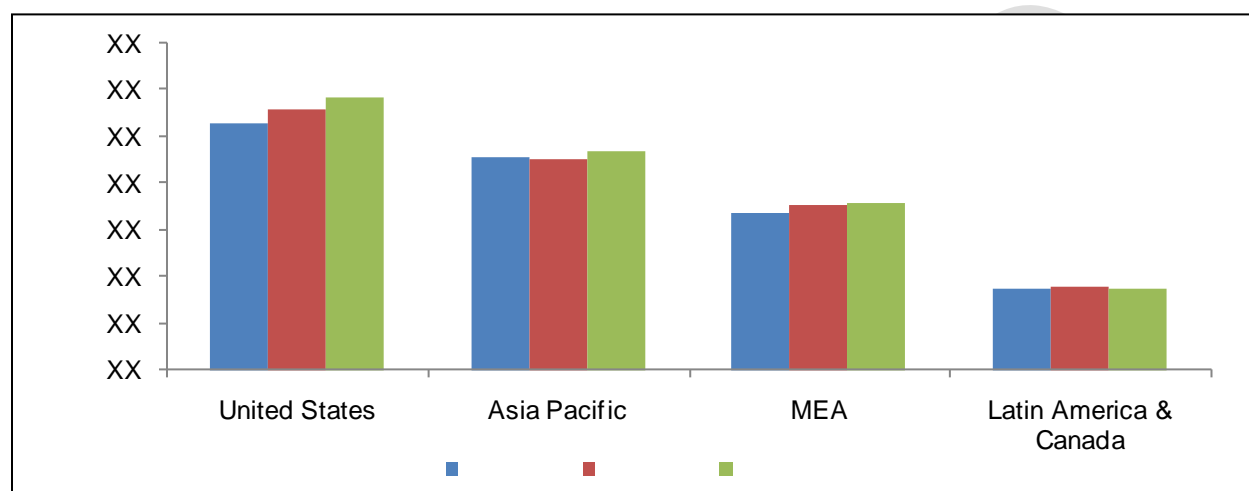


Source: 3M Annual Report, BIS Research

9.1.2.3 Financials by Region

FIGURE 12

3M COGENT-NET REVENUE BY REGION, 2012-2014 (\$MILLION)



Source: 3M Annual Report, BIS Research

9.1.3 FINANCIAL SUMMARY

For total year 2014, net income attributable to 3M was \$XX billion, compared to \$XX billion in 2013, an increase of XX percent on a per diluted share basis. Sales totaled \$XX billion in 2014, an increase of XX percent from 2013. From a business segment perspective, revenue was \$XX Billion in Health Care, \$XX Billion in Industrial, \$XX Billion in Safety and Graphics, \$XX Billion in Consumer, and was \$XX Billion in Electronics and Energy. From a geographic area perspective, 2014 revenue was \$XX Billion in Latin America/Canada, \$XX Billion in Asia Pacific, \$XX Billion in the United States, and \$XX Billion in EMEA.

Particularly in the segment of Safety and Graphics, sales were \$XX Billion. Organic local-currency sales increased XX percent and foreign currency translation reduced sales by XX percent. On an organic local-currency basis, sales growth was led by the personal safety and commercial solutions businesses; sales in traffic safety and security systems were down slightly year-on-year. Operating income was \$XX million, an increase of XX percent year-on-year; operating margin of XX percent.

9.1.4 KEY DEVELOPMENTS

Date	Strategy	Description
April 2014	Collaboration	3M Cogent announced the integration of its MiY biometric access control readers with Schneider Electric's Andover Continuum integrated security and building management solutions
February 2014	Collaboration	3M Cogent and Entrust, Inc. integrated biometric fingerprint authentication into the Entrust Identity Guard software authentication platform
May 2013	Contract	3M obtained a contract from The Australian Government Department of Immigration and Citizenship (DIAC) for three years to provide software and services for DIAC's new Biometric Identification System
May 2013	Collaboration	3M, Gemalto, Morpho (a division of Safran) and Oberthur Technologies formed the Secure Identity Alliance, a grouping dedicated to developing the usage of government issued eDocuments (identity, health cards, driving licenses and ePassports in particular) for increased security
February 2013	Contract	3M Cogent's MiY Outdoor Biometric Access Control Reader is selected by TRL Systems for its Pilot Program
April 2012	Contract	3M Cogent awarded a 10-year contract to supply high-resolution LiveScan booking systems and biometric identification solutions to the Hong Kong Police Force (HKPF)
March 2012	Certification	3M company's MiY-ID Gov biometric access control reader certified as an approved biometric authentication system by the U.S. General Services Administration (GSA) in accordance with FIPS 201 standard
February 2012	Certification	3M Cogent's biometric access control readers successfully completed the United States Transportation Security Administration's (TSA) Transportation Worker Identification Credential (TWIC) Initial Capability Evaluation (ICE) assessment

Source: 3M Website, BIS Research

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